AMERICAN AGRICULTURIST

FOR THE

FARM · GARDEN · & · HOUSEHOLD

"AGRICULTURE IS THE MOST HEALTHFUL, MOST USEFUL, AND MOST NOBLE EMPLOYMENT OF MAN."—WASHINGTON.

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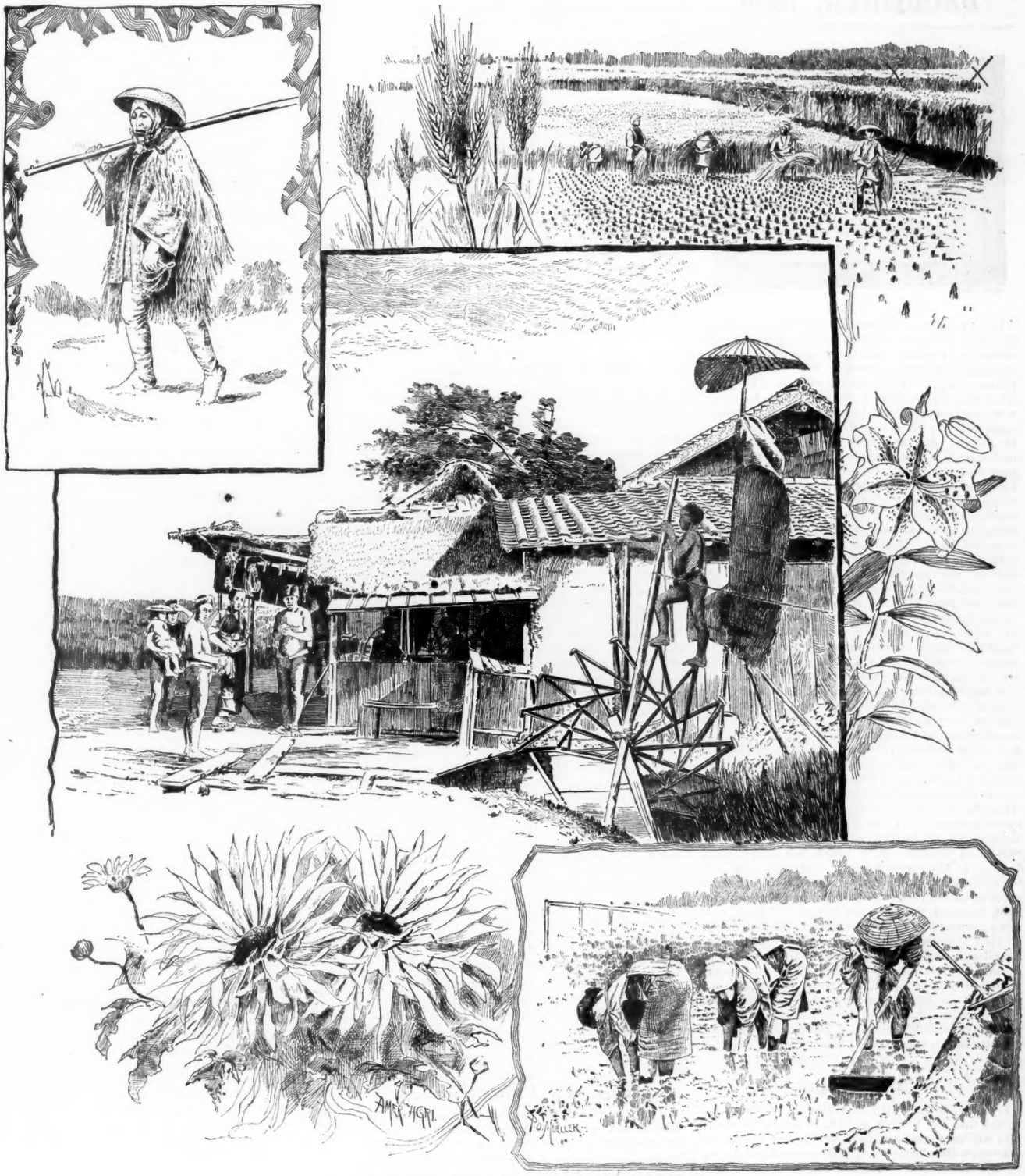

JAPANESE FARMS AND FARMERS.

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December.

Our birds of song are silent now,
There are no flowers blooming;
Yet life beats in the frozen bough,
And Freedom's spring is coming.

GERALD MASSEY.

FARM ∴ AND ∴ GARDEN ∴ WORK

DECEMBER, 1889.

In all but the southernmost States, harvesting is finished; but there is that following the harvest which is of great importance, and for the want of proper attention to which heavy losses often follow. We refer to the proper storing of the crops after they are harvested. The one thing needed to make our produce keep through the winter, and to come out in spring sound and in good condition, is—Brains! All farm-work requires more thought and care than most persons are aware. We hear it now and then said of a man, "He is a scientific farmer;" or of his farm, that "his is a model farm." The term "scientific," as applied to farmers and farming, is often used very vaguely, the persons using the term not having a definite idea of what is meant by it. If a man should plant his Indian corn a foot deep, of course his corn crop would be a failure. One neighbor would say that the corn was "planted too deep;" another would say that the seed was planted beyond those conditions which influence vegetation, and perhaps go on to say what those conditions were. One of them would be called a crude answer, and the other a scientific one. So in storing potatoes for the winter. If a farmer were to store his sweet potatoes in the same manner that he does his "white" or "Irish" potatoes, he would be very apt to lose his crop of "sweets." The root, in the case of the sweet potato, stops growing and ripens. In Texas and other sufficiently warm localities, the roots may be left in the ground all winter; but when raised in the Northern States, they must be stored where the temperature will not fall below 60°. In Virginia, New Jersey, Ohio, and other States where sweet potatoes are grown largely for market, large houses are built for storing them; these houses are furnished with stoves, by which the temperature is kept at the desired point. The "common" or "Irish" potato ripens up its tubers, differing from roots in having "eyes" or buds upon the surface. Both kinds of potato have completed their season's growth, and have gone to rest. To keep them so that they will start to grow next year, and afford us "seed," we wish to keep them perfectly dormant. The common potato, like the sweet, must not be frozen, but, on the other hand, if we were to store them in a temperature of 60°, as required for sweet potatoes, by mid-winter the eyes will have started, and the potatoes be in full growth, to the ruin of the potatoes as food and as seed.

Live Stock Notes.

Frosted Bits are cruel instruments of torture if thrust into the horse's mouth. Various forms of bits are now made with coverings of rubber or leather, which, being comparative non-conductors, do not freeze to the tongue at the first touch, like iron. In the absence of these, always take the frost out of the bits before they go into the horse's mouth.

Horses need special care in the early winter months. When pulled up after rapid driving or heavy hauling, they should never stand in the wind and cold without being blanketed. Neglect of this brings on many cases of colic, pneumonia, and other fatal attacks. Never leave a horse in its stall for the night with the wet and mud still adhering to its feet and legs. Clean out the stall thoroughly every morning, and if the horse stands in it through the day, clean it out again at night before bedding down.

Milch Cows.—Some dairymen make winter butter-making highly profitable. To do this there must be a good supply of milk. Intelligent care in feeding is needed to prevent the cows from falling off. Carding daily should be added to liberal feed.

Corn Fodder.—There is a great change in late years in our farming in the care given to saving the fodder from that raised for the grain, as well as in that raised solely for fodder. Excellent cutters and crushers are made, so that its mechanical condition is much improved.

Sheep.—Unless they can be sheltered from storms of rain and snow, it is hardly worth while to keep them. Properly managed, spring lambs will pay. They will pay for good keep, but not for that half-way neglect which is not keep at all.

Swine.—If a litter of pigs come on a cold day, bad management, or ordinary management, may lose the whole; while good management may, and usually does, save them all. This is the difference between "good and bad luck" in farming.

Poultry.—Encourage laying by the use of animal food, ground shells and bones. Don't keep old stock. Give the layers a new place. When snow is on the ground give a sheltered run, for exercise.

Market and Kitchen Garden.

It will not be safe to trust much longer to a continuance of mild weather.

Cabbages and Celery are crops of which it is desirable to continue the growth as long as possible. The most satisfactory way we have ever preserved cabbages is to set them in trenches, and cover with boards. In mild weather soft heads will become hard, and the heads are more accessible than when the cabbages are placed heads down and covered with earth. In trenches, the stems, or stumps, are preserved until spring, and we think that, for home use, a sound stump, to set out in spring for greens, to be worth as much as the head which it bore.

Celery is probably all stored in trenches. With this, and other crops stored in a similar manner, the amount of covering should be governed by the weather, adding more as it becomes colder. While we do not believe in storing a large quantity of vegetables in the house cellar, a small amount of celery, for immediate use, may be tolerated. Make a box about nine inches wide, with sides as tall as the celery stalks. Place a few inches of earth on the bottom, and stack the celery closely in the box, the same as in trenches.

For Spring.—Do not neglect to secure some rich soil for use in hot-beds and window-boxes; place it under cover; the barn cellar is a good place for storing it; or the soil may be placed in barrels in the barn, in a vacant stall. Light, sandy soil, that will not become sodden when watered, is to be preferred. Cold-frames in which the soil is to be sown later should be filled with coarse manure, which is to be removed when the beds are to be used.

Cold-Frames that contain cabbage and other plants are more likely to be harmed by too much heat than too much cold. Give an abundance of airing on mild days. The object is to keep the plants dormant, and not to encourage any growth.

Spring Work should be facilitated in all ways. Among these, late plowing. If grass-land is to be broken up, haul out the manure. See to sashes and repair glass. Repair shutters for hot-beds and frames. If there are not enough for every frame and a few extra, make them.

Orchard and Fruit Garden.

Winter fruit, save in the southernmost localities, is gathered. Our oft-repeated and still-needed injunction, not to shake or thrash off, or otherwise bruise the fruit, has rarely been heeded, and the injunction to *pick* the fruit by hand has seldom been followed. In many cases the fruit is still in piles in the orchard, where, according to an ancient custom, it is left to "sweat," or to "cure," before storing it for the winter. There are, unfortunately, few who have fruit to store for the coming winter. Even localities which usually have an abundance now report an entire failure of the crop. Those who have fruit to store should take all the more care with it.

Fruit-Houses.—On every farm where there is considerable fruit there ought to be a fruit-room. Many have the fruit-room in the cellar, which is not desirable, from a sanitary view, as there are gases given off by the ripening fruit which are very injurious to the family, unless greater care than usual is taken with ventilation. The first-class modern farm-house will have no provision for its milk-room, or for preserving vegetables or fruits. A separate dairy-house has so many points of superiority over a room in the cellar, that it is worth while to build one where only a few cows are kept. The saving of the running up and down stairs is no small consideration. A fruit-house need not be very expensive. It must, of course, never freeze, and there should be no sudden changes in temperature; should be quite dry, with complete control over light and ventilation. Building-paper, and other non-conducting material, greatly facilitate the building of such houses. The interior should be provided with shelves, not too wide for every part to be reached, and instead of plank slats are preferable; the front of the shelves should be provided with boards, set on edge, to make them really shallow bins, in which fruit can be inspected at all times and assorted whenever necessary.

Young Trees that were set out in earlier months, may, on mild days, have a mound of earth, twelve or fifteen inches high, made around the lower part of the trunk. This will keep the tree steady better than stakes, and will prevent the attacks of mice. Rabbits should be trapped, snared, or shot. They are acceptable on the table, and are now in good condition. If nursery trees are well heeled in, it will be best to leave them there, even if the weather tempt to plant them. A continuance of mild weather cannot be expected for long.

Strawberry Plants should have a mulch on the ground, but the plants themselves need but slight covering.

Laying down of tender raspberries and grape-vines may still be done, if the soil is open. With untested kinds it is prudent to protect a portion.

Flower Garden and Lawns.

The chief work is to keep the grounds in good order. By repairing accidents as they occur, the work will not all come at once in spring, and be of appalling amount. If a branch is broken, by storms or otherwise, remove it; saw off smoothly, and cover the wound with grafting-wax, coarse paint, or some such material.

Snow is apt to catch in the branches of evergreen and other closely-branched trees. It should be shaken out before it hardens.

Snow-Plows.—Have hand-plows for narrow paths as well as horse-plows for roads. Clear all the paths and roads soon after a fall, and before the snow gets hardened and tramped.

Lawns, especially when snow is on them, are apt to be crossed by thoughtless persons to the frequent injury of shrubs and small trees. Signs will do no good, but a temporary fence of stakes and one or two strands of barbed wire will not be unheeded.

Holland Bulbs.—Dealers sell very low their left-over stocks, and it may pay to buy a lot and run the risk of an open spell in which to plant them. If nothing better can be done, plant in boxes of earth in a cool cellar; keep the tops well covered from light. These may be set out in the open border as soon as the ground is open.

Greenhouse and Window Plants.

The plants are now all indoors, and, whether in greenhouse or window, take care that the insects do not get a foothold early in the season. If the plants were not properly cleaned before, make a job of it as soon as may be, in smoking with tobacco for the whole, then giving each individual plant its needed separate treatment. Smooth-leaved plants, like ivy, should have a weekly washing with soap and water, applied with a soft cloth. Follow this with water only.

Forced Plants.—Keep up a succession of bulbs in flower by bringing the pots from the cellar; also, hardy plants put in for this purpose.

Annuals.—If desired, a good show may be made by a few pots of favorites of this kind. Sow some pots now, and others a month later.

FARM-LIFE IN JAPAN.

FRANK G. CARPENTER.

The revolution which has been going on in Japan during the past two decades is the greatest wonder in the history of civilization. In less than a generation it has thrown off the customs and methods of an Oriental feudal nation, and has sprung full-fledged into the arena of our most advanced modern civilization. It has become a country of railroads, telegraphs and schools. Its biggest cities are now lighted with the electric light. It has newspaper publications running into the millions of copies a year, and its postal system is as good as that of the United States. Upon the streets of its capital one meets as many Japanese clothed in pantaloons as in gowns, and the clatter of the wooden shoe is giving place to the creaking of the patent-leather.

The traveler who visits merely the cities of Japan gets the idea that the old Japan has passed away, and that the country will soon be the same as America or England. This is a mistake. Four-fifths of the 38,000,000 people who make up the Japanese population belong to the farming or agricultural class, and this class is the same now as it was twenty years ago. It is out of the city that one must go to find the real Japan. These people have changed neither their manners nor their ideas. They think and act as their fathers did before them. They have not adopted new methods of farming, and their life moves on in the grooves of a thousand years ago. The Japanese farmer's widow shaves her head, pulls out her eyebrows, and blacks her teeth as her great-great-grandmother did, and not a few of the Japanese farmers shave the tops of their heads, and, combing their long locks at the sides and back into a cue like an old-fashioned door-knocker, plaster it down just over their crowns.

The country of Japan is wonderfully beautiful. The land is made up of mountain and valley, of hill and hollow, and every part of the whole empire seems to have been modelled by nature in her most picturesque mood. In the summer, the moist, warm air clothes all with verdure more green than the richest parts of Ireland or of Egypt in winter. The Island of Hondo, as big as one of the largest American States, upon which the greater part of the Japanese people live, is one vast garden, made up of little patches, each of which constitutes a Japanese farm. There are no fences, no big fields, and no cows. You look in vain for the scenes of American farm-life. In the spring you do not find the plow; and at harvest time the farmer, in his shirt-sleeves and top-boots, driving the American mowing-machine, is absent. There are no big barns, few horses, and no sheep, and as your eye travels for miles over this green quilt of crazy patch-work, you wonder where the owners live, and look for the houses of the farmers. The Japanese farmers do not live upon their farms. They huddle together in villages, and go back and forth to their fields day after day.

The average farm is not more than two acres in size, but the land is so well cultivated that one acre in Japan produces more than five acres do in America, and some of the richest of these fields have been producing two crops a year for more than ten centuries. The Japanese are scientific farmers, and their country is the triumph of careful irrigation and fertilization. Japan has large irrigating works. There are great reservoirs for the mountain streams, and the water is taken from one place to another through winding ditches, until it covers a great area of territory. It is raised from one level to another by pumps and water-wheels. About Osaka, in the cotton-fields of Western Japan, I saw hundreds of wells, each with its tall pump, in which the water was raised in buckets attached to long poles, the balance of which was aided by the fastening of stones or mud to the handle. On many of the streams were great water-wheels, turned by bare-legged coolies, who walked from spoke to spoke with as regular a tread as the dog in the churn, or the horse in the sawing-machine. These laborers were half-naked, and I was told that they were glad to wear out the soles of their feet in this labor for ten cents a day.

JAPANESE SIESTA. (*Drawn after an etching by a Japanese artist.*)

The Japanese fully understand the importance of irrigation, and they estimate that irrigated lands require only about two-thirds as much fertilizer as non-irrigated lands. Manure is a costly article in Japan. The lack of cattle, sheep, and horses leaves the people dependent to a great extent upon night-soil for fertilizers, and the advantage of such manure can be seen in the wonderful condition of the Japan of to-day. The soil is as black as that of the Nile valley. It is as rich as guano, and it has been worked with the most exhausting crops since the days of Christ. It is kept in this condition almost entirely by the fertilizer of the water-closet. Not a bit of the sewage of the cities goes to waste. At certain hours every evening, an army of laborers goes about Tokio with great buckets on pushcarts, and the reservoirs of the city are emptied, making the town smell for the time worse than the slums of Naples. The farmers themselves save everything that can be turned into

manure, and this night-soil is carted to wells covered with straw caps, in which it is left to ferment until it is ready for use. The manure is used in a liquid state, and it is distributed at just the points where it will do the most good. It is put directly about the plants, and, at the periods when fertilization is common, the fresh, pure air of Japan is tainted with the most offensive of odors. This smell is the great blot upon Japanese farming and farm-life, and the use of such manure cannot but be productive of disease. I know many Americans in Japan who will not eat Japanese vegetables unless they have been cooked in their own households. With such fertilization the danger of eating lettuce or radishes, which have not been thoroughly washed, can be appreciated.

Within the past few years, Japan has been importing some South Carolina phosphates. Fish manure is used to a large extent, and the more advanced agricultural thinkers of the country look for a change in the methods of agriculture with the increase in the numbers of live stock. It seems strange to think of a country without cattle. But this is what Japan was until a few years ago. At present, there is not more than one cow to every fifty people in Japan, and a drove of sheep would be looked upon by the farmers of the interior as wild animals. The reason for the absence of stock comes largely from the religious belief of the people. The majority of the Japanese are Buddhists. They believe in the transmigration of souls, and it has for years been contrary to their custom to destroy anything that contains animal life. With the new revolution, however, infidelity is spreading among the people, and the money which can be made out of cattle-raising is changing the belief of the people. In Western Japan some very good beef is now raised, and some of the wealthier of the Japanese are becoming addicted to the use of butter and milk. At present, the butter used by the foreigners of Japan is imported, and there are not more than a dozen dairies in the whole country. I had great trouble while living in Tokio in finding butter which would suit my wife, who was not very well at the time. We were living at the hotel, and the butter furnished was imported in cans from France. I at last found a little dairy of half a dozen cows, situated in the heart of the city. The cows were as clean as though they had been given Turkish baths for weeks, but the butter furnished me was as white as the snows upon the top of Fuziyama, and it cost me one dollar a pound. It was made without salt, and was wrapped up in a green leaf for me to carry home.

Horses are almost as scarce as cows, and the average Japanese horse is scrawny, scraggy, and underfed. When used as a beast of burden, the driver usually walks beside the horse instead of riding him, and when hitched to a cart he goes in front and leads him. I saw but little plowing, and I found very few horses, save in the mountainous districts, where they were used as pack-animals. I was surprised to note that in some districts nearly all the horses were stallions, while in others I could see nothing but mares, and I was told that this was until recently a custom of the country, and that by an imperial edict the horses were thus distributed, according to sex. The average horse in Japan has shoes of straw, instead of iron, and until recently distances were measured by the number of straw shoes that a man or a horse would wear out in going from one place to another. These straw shoes are about half an inch thick. They are made of rice straw braided so as to form a sole for the horse's foot, and they are tied on by straw strings just below the fetlocks. Every cart has a stock of fresh new shoes tied to the horse's harness, and the driver keeps his eyes on the feet of his beast and changes his shoes as soon as they become worn. These shoes cost less than a cent a set, and as to the straw sandals which the men wear, you can buy eight of them for one cent. All along the country roads of Japan you will see the straw shoes of men and horses, and I am told that the average horseshoe will last for about an eight-miles' walk.

About Nikko, in the mountainous regions of Japan, I noted that the pack-horses were universally led or ridden by women. They sat nearly on the necks of the horses, in front of great baskets containing loads of grass, or rice, or wood, and when I approached them riding in a jinriksha, they slid down over the horse's head to the ground instead of getting down at the side as we do. They did this because the roads were narrow and they feared their horses might scare. The harness of these Japanese horses is as queer as their shoes. The saddle is fully eight inches high, and it is nearly as big as the ones we use for riding. The crupper is wrapped around with cloth until it is as big as your arm, and it raises the horse's tail well up from his body.

It is human muscle, however, that cultivates Japan. Its husbandry is that of the spade and the mattock, rather than the plow. The most common agricultural implement is a hoe, with a blade of iron or steel, six inches wide and two feet long. The handle to this is about the size of an ax-handle, and the farmer digs up the ground with it, bending his back double at every stroke. Japanese farming is back-breaking work, and in my drives through the country I seldom saw a man or woman who was working in the fields in any other position than that of a right angle, and the most common sight was a bent-over male figure whose sole clothing consisted of a cloth about the loins and a straw hat which, for all the world like an inverted butter-bowl, hid his features from view. Women working in the fields were clad in a single garment, which was usually of blue, and some of them had bright handkerchiefs covering their heads. Both sexes work together, and I have never seen people who, with all their hardships, enjoyed their work more. They laughed as they worked, and, though their hours of labor are long, their siestas are frequent.

The Japanese farm-workman labors from 7 A. M. until 6 P. M., but he is supposed to take about three hours every day for rest. He usually has a little fire or a box of charcoal somewhere in the field, and on this fire a pot of hot water perpetually steams. Beside it lies his little pipe, with a bowl no bigger than a thimble, and he stops from time to time to make a cup of tea and to smoke his pinch of tobacco. [See preceding page.] The wages are, on the average, about ten cents a day for men, and not more than half that amount for women. Still, the wants of the people are few, and though poverty is common, paupers are practically unknown.

The home-life of the farmer and farm-laborer is far pleasanter than that of his class in any other Eastern country. When he goes home from his work, he will take a hot bath before supper, and he will take another when he gets up in the morning. If he is very tired, he will call in a blind shampooer, who will knead his whole body until every part of it is rested, and if he has not the cent to pay for this luxury, his wife will do the work for him. He will eat with a good appetite his dinner of rice and raw fish, conveying the morsels to his mouth with chop-sticks the size of a slate-pencil, and washing them down with the best of Japan tea. After a game of Japanese checkers or goal, he will lie down on the floor with his wooden pillow under his head and sleep just as soundly and sweetly as the American farm-hand who makes two dollars a day, or our farmer whose year has been good, and whose wheat is going to turn out at least forty bushels to the acre.

[In our frontispiece the central view is of a Japanese farm scene, with a tateba and water-wheel; in the upper left-hand corner is a Japanese farmer, in winter costume; at the right is a rice-field in harvest time; and at the lower right hand is a group irrigating and planting rice. All were drawn after photographs taken in Japan, for the AMERICAN AGRICULTURIST.]

CALIFORNIA FIELD AND FOREST FIRES.

CHARLES H. SHINN, CALIFORNIA.

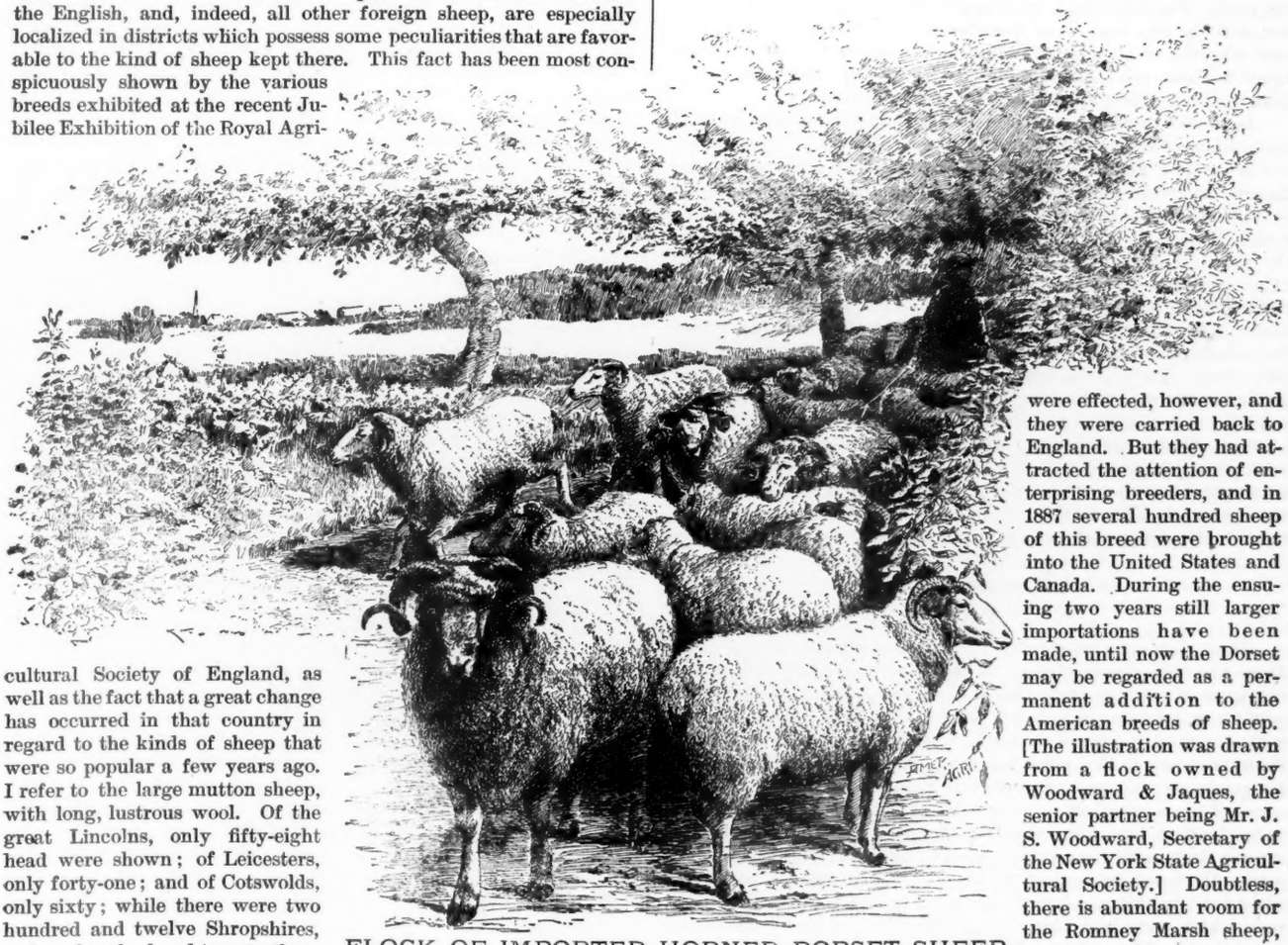
At no time for twenty years have the fires in the grain-fields, pastures, and forests of California appeared so numerous and destructive as the past summer. Almost daily losses, ranging from a few hundreds to many thousands of dollars, and extending over tracts of from five acres to many miles in extent, have been reported. The season has been very dry, windy, and hot, and under these conditions many fires, ordinarily small, become large ones. The destruction of grass and grain can be easily repaired, but the loss of forest growth is a different matter. Tracts of five and ten square miles have been burned over in the foothills, and all the pines destroyed. Much of the land thus burned over is totally unfit for agricultural uses, and, when denuded of the larger timber by fire, is of very little value for any purpose. Three out of four of the fires reported this year are traceable to tramps or campers. The farmers and land-owners of the State are likely to demand more stringent laws against carelessness, as well as against malicious mischief. In the great valleys the belts of orchard and vineyard are now the greatest protection against the spread of fires, and they are increasing in extent so fast that in a few years the present danger will be much diminished. Whole townships of wheat and barley in some districts still lie in such continuous fields, with but narrow lanes occasionally between, that, in a gale of wind, fire would be very difficult to check until it reached some slough, creek, or wide orchard. Orchard-planting, as I have said, greatly lessens the danger of extensive field-fires. The danger is quite as great in many other sections of the country.

THE RIGHT SHEEP IN THE RIGHT PLACE.

HENRY STEWART.

No other animal is so much the creature of its environments as the sheep, and when in its wrong place, the old adage that "sheep are always an unhappy flock," as alleged by the old poet Virgil, becomes a sad truth to the mistaken shepherd. American shepherds have experienced this fully. Of many costly imported long-wooled sheep, which were so much admired at the shows, when fresh from the English breeders—fat, pampered and stubble-sheared, to give them the usual rotund and smooth shape—we may well say, "Where are they now?" They have become "unhappy flocks."

Most of our mutton breeds of sheep, if not all of them, are brought from England, where the climate differs widely from ours, being cooler and moister. This fact is to be taken into consideration by every farmer who desires to go into the business of rearing sheep of some kind with which he is not acquainted. Another fact is that the English, and, indeed, all other foreign sheep, are especially localized in districts which possess some peculiarities that are favorable to the kind of sheep kept there. This fact has been most conspicuously shown by the various breeds exhibited at the recent Jubilee Exhibition of the Royal Agricultural Society of England, as well as the fact that a great change has occurred in that country in regard to the kinds of sheep that were so popular a few years ago. I refer to the large mutton sheep, with long, lustrous wool. Of the great Lincolns, only fifty-eight head were shown; of Leicesters, only forty-one; and of Cotswolds, only sixty; while there were two hundred and twelve Shropshires, and one hundred and twenty-three Southdowns. All these sheep are farm animals; pastured on grass and fed in the summer; "folded" on green crops; and in the winter on roots, hay, and grain food as a finish. These sheep are not local breeds, but are spread all over the country where the farming is of the best kind, and where mutton, wool, and lambs are produced for profit. The two last mentioned were originally fed on the short, rich, dry pastures, known as "downs," rolling lands, underlaid with chalk, breezy, and in every way suited to this class of sheep. They have there reached a point of perfection, under these favorable conditions, much like that of our American Merinos in Vermont, Western New York, Pennsylvania, Ohio, and Michigan; a breed of sheep which has eminently proved the right one in the right place.



FLOCK OF IMPORTED HORNED DORSET SHEEP.

Among the local breeds shown at the Royal Exhibition, which are specially worthy of note in this connection, were: Dorset horned, Romney Marsh, Herdwick, and Welsh mountain sheep; and these are all of interest to American shepherds from their special peculiarities. Thirty-one head of Dorsets were shown. These sheep are kept in the county of Dorset, in the south of England, where the climate is the mildest, so that the farm-houses are often embowered in fuchsias, geraniums, and other tender flowering plants, which are trained up to the roofs and over the porches. Snow is there rarely seen, and figs, and other tender fruits and vegetables, can be grown with ease even through the winter. The great London market is within three or four hours of this enviable locality, open to the southern breezes and the genial sun, and cooled and kept moist by the damp air of the ocean. The Dorset sheep has thus grown to perfection; and, for the special purpose of rearing lambs for the greatest market in the world, has filled its place perfectly. This sheep is a special lamb-breeder—yeaning twice in a year, and often producing five lambs in a year. But how will this sheep succeed when transplanted from its genial home to our torrid, dry, summer heats, and our Arctic cold—a hot-house plant, as it were, transplanted to a barren soil, in a climate of frosts, and snows, and ice?

A small flock of these Dorset sheep was brought to this country in 1884, and exhibited in the Chicago fat-stock show. No sales were effected, however, and they were carried back to England. But they had attracted the attention of enterprising breeders, and in 1887 several hundred sheep of this breed were brought into the United States and Canada. During the ensuing two years still larger importations have been made, until now the Dorset may be regarded as a permanent addition to the American breeds of sheep. [The illustration was drawn from a flock owned by Woodward & Jaques, the senior partner being Mr. J. S. Woodward, Secretary of the New York State Agricultural Society.] Doubtless, there is abundant room for the Romney Marsh sheep, and for the mountain breeds; the former on the millions of acres of our low coast-lands, which could be drained and made into valuable pastures. This sheep yields excellent mutton, and a most useful fleece, averaging eight or nine pounds of rather long-staple, coarse clothing wool; suitable for the class of goods now so popular for men's clothing. The latter kinds of sheep, the Herdwicks and Welsh mountain, are herding sheep, kept in large flocks, out of doors, and exposed to storms of wind, rain, and snow; and need help only at lambing-time. Then the shepherd, in his hut, is the foster parent; but only when the season is especially rigorous, and the lambs, newly dropped, require protection for a few hours, until strong enough to reach the teat and get its food. These sheep produce the choicest mutton, and a rather short-staple wool, valuable for flannels, blankets, and clothing fabrics. The mountain herbage gives the flesh a very piquant, rich flavor, and a tenderness which renders it of more than usual value. The sheep are extremely active, wandering over the crags and precipices, where the intelligent shepherd-dogs only can follow them. Some years ago, when traveling in the English mountains (among which are nestled those beautiful lakes haunted by poets and artists), I saw large flocks of

the Herdwick sheep, each attended by its shepherd and his dog. One incident was specially interesting. On the road was a man waving his arms like one of the old-fashioned telegraph signals. He was signaling to his dog, away up on the mountain, gathering the flock; far beyond reach of the voice, and almost out of sight. Here and there the sheep were in bunches, hidden from the view of the dog; but the signals of his master were understood, and he wound about the crags, and brought out the small bands of sheep that were hidden in the nooks. By and by, the whole flock was gathered and brought down to the road, where, as they emerged, the shepherd counted them. Some were missing; and, at the signal, the dog darted up the mountain, and soon found the wanderers, which scampered down the rocks as fast as the dog could follow. On the road another flock appeared, coming. The dog, at the signal of his master, quickly had the large flock of four hundred and fifty sheep all ranged on one side, and stood guard in the middle of the road. The other flock was ranged by its dog in the same manner, and the two dogs stood together, after a friendly recognition, and wagging of their tails, until the two flocks had passed each other, without mixing, and each went on its way, kept from straggling by their ever-watchful and active guardians.

Is there not room enough in all our extensive mountain tracts for millions of such sheep as these? There are vast tracts all along the Allegheny and Blue-Ridge mountains, from Alabama to the Lakes, where these sheep would thrive admirably. As the timber is cut off, these lands become a wilderness; but there are no better grass-lands in the world, when they are brought under the proper cultivation. Are not these mountain lands the right place, and these sheep the right flocks, for the profitable pursuit of the shepherd? To produce everything required for use that may be easily and profitably done, is the first element of national economy. To permit opportunities to escape, and material to be wasted, is a public loss. There is room for sheep enough, and of all the various kinds, for the production of the best meat, and most useful wools, not only for our own domestic purposes, but for exportation, in vast quantities. Our present product of wool might be trebled with great profit, and America might become, in this regard, as it is in regard to cotton, the purveyor to the world. There is nothing in the way but the absence of the will and of the necessary energy, and, most of all, perseverance and persistence on the part of farmers.

IMPROVING SEEDS.

C. G. NIC, TEXAS.

Many farmers are too much given to buying novelties in seeds. It may be advisable to change seeds occasionally, but the constant changing of varieties from season to season, in the hope of getting perfection, is as absurd as it is expensive. No judicious poultryman will change from Plymouth Rocks to Leghorns one year, to Langshans the next, to Red Caps the next, and so on through the catalogue, simply because he successively reads about the fine performances of these breeds or sees them in gorgeous array at the county fair. He first determines what he wants chickens for—whether for eggs or flesh, market or home use—and after careful investigation selects the breed best suited to his purpose, adhering to them year after year, culling and improving, until he builds up a strain of his own which suits him better than any other strain of that or any other breed. The wise breeder of cattle or horses pursues the same method; why should it not be best for the farmer in the matter of seed? The variety of corn which produces such mammoth yields, that are read about with amazement and skepticism, was built up by judicious culling, improving and selection.

I know a Texas farmer who has succeeded in establishing a variety of oats which yields enormously in his particular locality. I know others who have each done the same with corn, cotton, peas and Irish potatoes. In each of these cases a good, healthy variety was first selected, which, from close and intelligent observation, gave promise of desired results. Then, besides the main crop, there was a special seed-plat planted. This seed-plat was cultivated like a flower garden, and only the best plants selected for another year's seed-plat. By repeating this process for a few years, eliminating undesirable and encouraging desirable tendencies, the variety was established and became famous.

In the improvement of corn, for instance, there should be a seed-plat sufficiently remote from the main crop to prevent interpollenization. It should receive the most careful and prudent cultivation—presuming, of course, that the ground is naturally or artificially fertile, and adapted for corn. Before the tassels appear, go through the corn and remove the top from all dwarfed or unpromising stalks. When the ear begins to form, go through again and mark all well-fruited stalks or those which make the nearest approach to your ideal. At maturity, make a third selection, rejecting all marked stalks which have fallen short of the required attainment. And when the choice ears are finally gathered, there should be still another selection of the best. These "refined" seeds may be planted the next year in another seed-plat and the same process of selection repeated. This, continued for a few years, will soon establish a variety which will suit your purpose better than anybody's "mammoth" or "prolific." Meanwhile a careful selection of seeds for the main crop will have kept it up to at least an average yield, and the surplus of the seed-plat will go directly into seed for the main crop or into the bin, without the slightest loss.

This is troublesome, of course, but it pays. Any intelligent farmer—and no other kind will succeed—may build up standard varieties which will suit his climate, soil, purposes and market demands better than high-priced seeds which he may buy from remote sections of the country, and which may have been grown under conditions unknown or impossible to him. He may develop early varieties, or prolific varieties, or varieties suited to any particular purpose. It is all a matter of intelligent observation and painstaking attention. Besides filling his own seed orders and getting something which suits him exactly, the farmer who follows this plan will find his seeds in demand throughout the neighborhood, county or State, and it is not at all improbable that they will become a source of considerable revenue. But better than all, he begins to see the opportunities for improvement and to fall in love with the operations of nature. From a plodding toiler he becomes an enthusiastic cultivator; from a blind clod-hopper he becomes a wide-awake farmer. Ten to one he will soon begin to improve his stock, mend his fences, brighten up himself, make his family more comfortable, and in every way develop into a better man and better citizen. There is no shadow of doubt that he will make more money—and that is what we are after.

BEE QUESTIONS ANSWERED.

Charles W. Bolt, Litchfield Co., Conn., sends us several questions relating to matters of general interest to beekeepers. They are answered as follows, by A. H. Duff:

Question:—How long is a bee in going a mile; also, how long will it take one to go a mile, get a load from an average honey-plant, return, and unload, ready to start again?

Answer:—Bees have been known to fly at the rate of sixty miles per hour, or a mile a minute. But in quest of honey they do not fly so rapidly. On an average, they may fly a mile and return with a load every twenty or twenty-five minutes.

Question:—Should the brood-frames or combs in brood-frames be kept just seven-eighths of an inch apart for comb-honey? Is it true that if not, the bees will not store as much honey in them when working for comb-honey?

Answer:—Brood-frames, or frames of combs in the brood-chamber, should be spaced an inch-and-a-half from center to center. Cut the frames from a board seven-eighths of an inch thick and leave five-eighths space between each frame. This will give one-and-a-half inches for each brood-comb; for surplus honey use two inches.

Question:—Is enameled or porous cloth the best for all seasons, or is enameled cloth best for spring and summer?

Answer:—Either will answer. The enameled cloth will last longer.

Question:—How is it best to manage in packing for winter when the combs are full of brood? I use the Simplicity hive, and have to take out combs and make room for chaff-cushions.

Answer:—We do not consider chaff-cushions in the Simplicity hive as any protection in winter. It is best to use large chaff-hives and leave all the combs in, except in very weak colonies, when chaff-cushions may be used as division-boards to contract the space.

Question:—What method is best, when no extractor is used, to get the bees to take honey from surplus combs which have but half a pound to two or three pounds in each frame?

Answer:—The extractor is indispensable unless we expose the combs to the apiary, when the bees will clean them out. We think it better to keep them over, and give them next spring to colonies that need provisions.

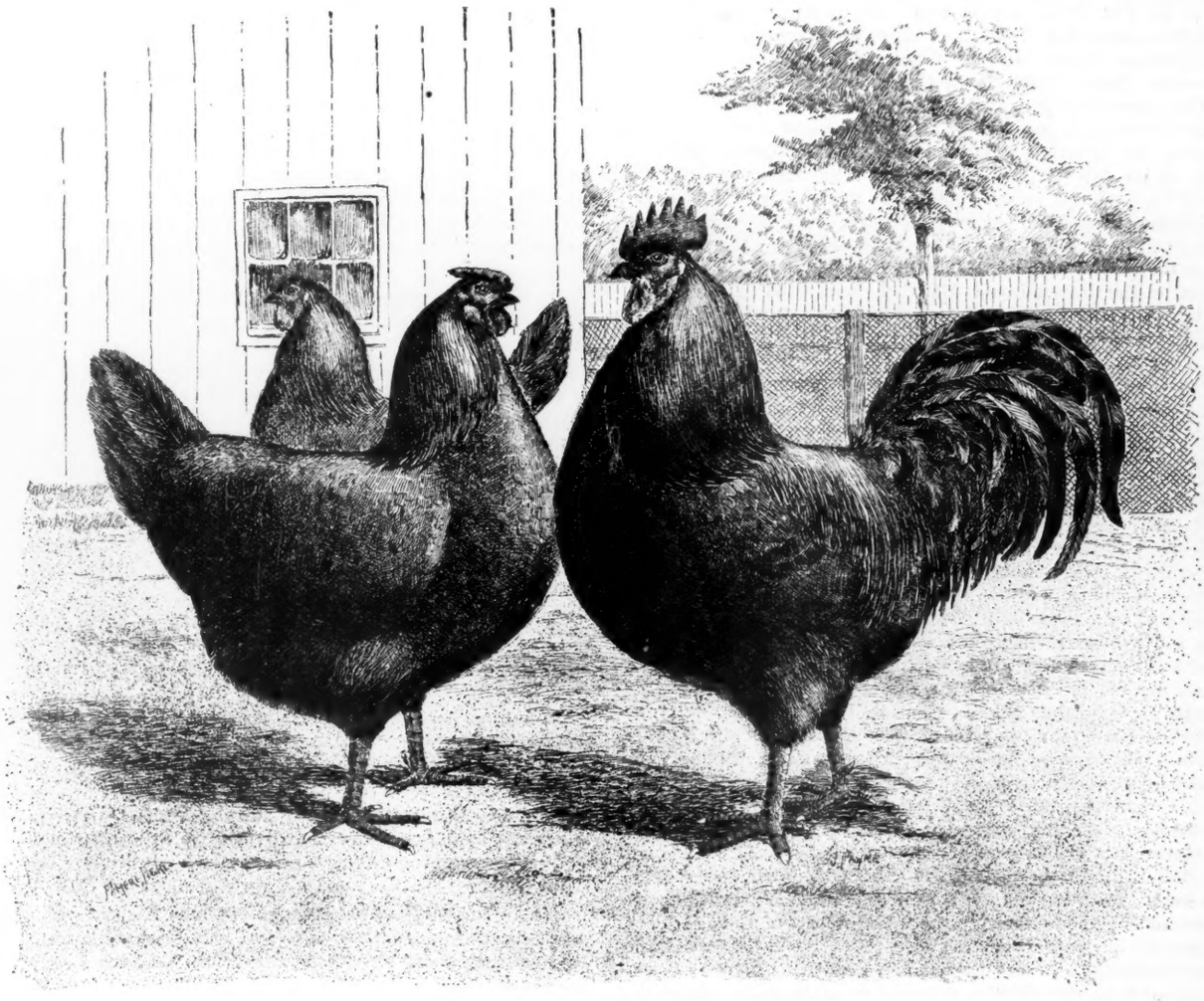
Question:—Why is it that L. L. Langstroth is poor, if he has accomplished so much in bee-culture?

Answer:—Because other beekeepers "stole his thunder." Father Langstroth's inventions accomplished much for beekeepers, but not for himself.

THE ORPINGTONS—A NEW BREED OF FOWLS.

Our illustration shows a pair of fowls of the new breed originated by William Cook, of Orpington, England. The breed is made up of a mixture of Plymouth Rock, Black Minorca, and Langshan, with a view of combining the good points of each. In form the Orpington is a symmetrical, upstanding bird, with a fine, graceful carriage; the plumage black throughout, with green reflections. The legs are free from feathers, dark, strong, and of medium length; four toes on each foot, with white toe-nails. The face is red; comb single, not large, and less liable to freeze than those of the Mediterranean breeds. The breast is broad, deep, and full, with long, straight breast-bone. The skin is white, thin, and fine in texture. The standard weight of the cocks, fully matured, is about nine pounds, of the hen, seven pounds. The chicks are hardy, and feather and mature early. The object of Mr. William Cook in forming this new breed was, to combine abundance of eggs with superior flesh for the table; hardiness of constitution; rapid growth, and fine form and plumage. To effect this he selected the Black Minorca because it is a great layer, the Plymouth Rock for its general good qualities, and the color of its eggs; the Langshan for its large size, laying qualities, and excellent flesh. These three breeds he crossed together, and after seven years of thus experimenting, he contends that his Orpington breed of fowls, for general purposes, are the best in existence. He has sold specimens of them to all quarters of the globe and they have given universal satisfaction.

The above is his story; but how reliable it may prove in our country we trust we shall soon have the opportunity of knowing, as he says he has now sent some to America. It may be doubted whether a permanent, reliable breed can be formed in seven years, or even in ten, from a mixture of three others so different in conformation and qualities as the Plymouth Rock, the Minorca, and Langshan. The Plymouth Rock has been in existence about twenty years, and sports still occasionally crop out showing the characteristics of the two or three other breeds that were crossed to form them. There is hardly any breed that will not throw an occasional "sport."



A TRIO OF ORPINGTON FOWLS.

THE BROODER HOUSES OF HAMMONTON.

MISS E. K. WINANS, NEW JERSEY.

Hammonton, a village in sandy, Southern New Jersey, is an interesting place to the outside world, because there the artificial raising of chickens and ducklings for market is carried out on an immense scale. The sight of six thousand young chickens under one roof seems magical to any one who knows the difficulty of rearing artificially one hundred in winter by one less well provided with proper houses. Hammonton is near Philadelphia, and that is often supposed to be its market, but its poultry in spring, like its blackberries in summer, all go to New York.

There are other places where great numbers of chickens and ducks are to be seen, several being near Boston, but for some reason Hammonton is the most famous. The newspapers have often described it. Unfortunately they have told wonderful fairy stories about the place, giving to a few names the fame of the tens of thousands of chickens belonging to many people. Poultry-raisers need not emigrate there as they do, acting as if there were some special influence in favor of "broilers" about that particular township. The work can be as well done elsewhere, though the light, porous soil of Atlantic county is an advantage, drying quickly after rain and not holding snow for more than two days after it falls. The earth under the grass looks like sea-sand. It is not sea-sand in anything but looks, for from it grows beautiful fruit. It is also a good point at Hammonton, that furnishing eggs for incubators is a regular and separate business. Until lately the poultry-raisers have, as one of them says, "used up our horses and wagons searching for eggs all over the country." Eggs from all varieties of fowls are used, but there are more Cochin and Brahma chickens in the flocks

than even the popular Plymouth Rocks. Eggs from old hens are thought to give stronger birds than those from pullets. The brooder houses are everywhere. In the village street are several, and out in the lonely country are more, new and old, shiftless or prosperous. Every year numbers of men and women who have caught the enthusiasm for "broiler" raising go to Hammonton and invest all they have in incubators and buildings. One who knows says that most of these new-comers fail in the work the first season because they do not know what little chickens need nor how to rear them, but that if they will only keep on trying long enough success can always be won, usually in the second season. Some of the brooder houses are surprisingly small. In a low building, twenty-five feet long and eight feet wide, a thousand chicks are sold at ten weeks old in one season. They are raised in two lots of five hundred each. The old system of separate brooders heated by lamps has been abandoned for the better one of having both brooding house and brooding boxes heated by pipes of water starting from a coal stove. The houses are all long and narrow, with a hot-bed sash for every five or six feet of the sloping roof. About five running feet or thirty-five square feet of the floor space are allowed for each hundred chickens as first hatched. When older they are given a little more room. The inevitable deaths thin them out more than enough.

The owner, beginning with a small house, is apt to build an addition each year, sometimes all in a straight line, sometimes changing the direction a little, though always facing south or nearly so, for the sun heat is precious. That terror of brooding houses, leg weakness, is best kept off by moderately cool floors for the fledging chicks, with plenty of sunshine. Few of the Hammonton chicken houses are painted; most of them are the yellow of new or the grey of old pine wood, but they are well built and keep the heat in and the wind out. Many of them stand in small yards and have nothing to do with any full-grown fowls. Eggs are bought; the chickens are hatched and reared with no more knowledge of any world beyond their house than is given by an occasional hour in a tiny wire run. One who knows, if any one does, says this work could quite well be done in the heart of a large city. Brooder houses really are, in a way, factories, where a certain combination of eggs and corn meal is made into a high-priced food—spring chickens.

There are differences of detail in the various houses, but a description of one gives an idea of them all. This especial brooder house stands near the main street of the village. One section of it is several years old, one is two years old, another is quite new, and there will be an addition next year. There is first a vestibule; beyond that is a large light room devoted to the many medium-sized, self-regulating incubators used by the owner. The room is warm and everything in it is shining clean. In one corner is a square, bricked pit, in which stands the heater, a coal stove excellently made for the purpose. Steps lead down to the floor of the pit, for it is lower than the level of the incubator room. Pipes of hot water lead from the heater through the wall and run under the whole length of the floor of the next room, where are the brooding pens. The north side of the brooder room is a passage with a boarded floor. All the south side is divided into pens; over them the slanting roof is nearly all of glass, and outside of each pen is a wire rim. Half of the floor of the pens is boarded, half is deep, loose sand. The brooders are part of the building. Little square wooden tubes come up through the boarded part of the pen floors, bringing hot air from around the water pipes. Over the tubes stand tables two feet square and four inches high made of thin boards. The hot air from the tubes is reflected from the under side of the tables on the backs of the chicks. These brood covers are surrounded with snug curtains which chickens soon learn to push aside. Such a house is a good model for beginners to copy. There can be gates used to keep the youngest chickens entirely on the boarded floor, if desired. If they were so kept for the first week of their lives, the principle would be much the same as that on which are planned those brooder houses having a shelf for the chickens newly hatched. That is not often necessary in Hammonton's mild climate, where on sunny days the sandy floor in the pens feels warm to one's hand.

Of course the pens nearest the stove are the warmest ones, and these are kept for the youngest of the flock. Away at the other end of the long room are the ten-weeks-old chickens, plump and strong, ready for market. The chicks are fed at regular hours, principally corn meal baked in cake for the younger ones, scalded for those older. They are fed in troughs made of bits of lath. They have a deep layer of wheat screenings and chaff on the sandy floor, and they have always plenty of clean water furnished in drinking fountains so that they may not get their chests wet. Everything about them is thoroughly cleaned each day. These chickens, more than three thousand in number, many of them fledged, were delightfully vigorous and well. And those myriads of bright-eyed little beings are a cheery sight, with their plumage all kept glossy by their life in sand and chaff. There are two reasons for their fine appearance: They have good care, and each ailing one is taken away the instant it is noticed. The greatest good of the greatest number must be the motto in raising animals by the thousand. In June the houses are empty; they are left to air all summer, and in the yards crops are grown.

The question is much discussed whether the markets may not soon be overstocked with spring chickens through such great farms, but there are, as yet, no signs of that danger, and as long as it is so difficult to raise chickens in the winter, as it still is, even in the best of brooding houses, there is little probability of their being cheap food. The percentage of deaths must always be heavy, though after everything is in running order and the owner has found out the way, it can be lessened each year. Proper heat is the first requisite. Chickens need a tropical temperature for the first ten days of their lives, unless they are under their mothers, and thousands of those hatched artificially die because they have to run about on a cold floor. The Hammonton houses are now almost perfect in this regard. Their owners wisely dispense with paint and "fancy fixings" in order to afford a system of hot-water pipes. Any one intending to build or alter a brooder house will do well to go there or to some other place where there are successful ones and see for himself the encouraging flocks in their comfortable homes.

POULTRY-YARD SCRATCHINGS.

H. C. DUDLEY, KENTUCKY.

Charcoal is much appreciated by the fowls. The best is formed of charred grain. Corn roasted like coffee and fed twice a week would no doubt pay for the trouble.

Wheat and oats should be given alternately—oats always dry; wheat either dry or cooked. I have invariably had good results from feeding sound wheat boiled to bursting.

A moderate dose of sulphur given twice a week serves as a laxative and blood purifier. The sulphur permeates the whole system, even coming through the skin; and, being death to insect life, causes parasites to drop off.

Season all soft food with a pinch of salt. A small quantity of flaxseed meal mixed with their morning meal is also strongly advised. It makes their plumage bright and glossy, and deepens the color of their combs and earlobes.

Moulting hens require extra attention. Their rations should consist of a variety of foods, rich in all the elements of nutrition, for every want of the system must be satisfied before the process of feather-making can be materially assisted.

Dry lime is too caustic to be given alone. Keep a vessel of lime-water convenient, and mix a small quantity with soft food and also with their drinking-water. Lime water is a corrective of bowel diseases, and it is also a remedy for soft-shelled eggs.

Make fresh dust baths and sprinkle them slightly with carbolic acid. Provide a plentiful supply of grit or sharp gravel. Keep feeding-troughs and drinking-vessels clean and wholesome. And toward the close of the moulting season make a number of nice new nests, for hens thus cared for will pay for the trouble by heaping your egg-baskets when the market is at its best.

The value of lime in the poultry-yard cannot be overestimated; experience teaches that there is nothing more effective as an insect-destroyer than a thick coating of whitewash made of fresh lime and an infusion of crude carbolic acid. Cleanse the house thoroughly before applying, and cover every accessible portion of the wood-work, especially the perches and the sills on which they rest. A generous fumigation of sulphur and tobacco is also advantageous.

Red Spiders.—In the house-culture of plants a serious question is, how to keep the red spiders away. Every precaution to prevent their attacks should be used, such as keeping a kettle or saucers of water among the pots. Sponges filled with water and placed among the branches of large plants have a very noticeable effect, as the evaporating water comes directly in contact with the leaves of the plant, so that the spiders become discontented and leave.

FARM COTTAGE COSTING $2,000.

The perspective and floor plans herewith are of a suburban cottage or small farm-house, of neat and home-like appearance, and containing every convenience for a small family. It was designed by L. B. Valk & Son, architects, New York. Its length is thirty-five feet; width, thirty feet, exclusive of the piazza; with posts twenty feet. The cellar extends the entire width of the house. It it seven feet high in the clear, with cement floor, and walled with stone, laid in cement mortar, pointed inside to the grade line, and on both sides above it. Access is had to the cellar by a flight of stairs opening from both the entrance-hall and the kitchen. An outside hatchway may also be provided, if desired. The first story is ten feet high in the clear. Its floor-plan is very clearly shown in Fig. 2. The railing of the porch is surmounted by a shelf to hold potted plants. The parlor and dining-room are each provided with an open fire-place and bay-window, both of which contribute to give a bright, cheery aspect at all times of year. The two rooms may be separated by sliding-doors or a portière. Both may communicate with the hall in the same manner, so that the greater part of the first story may virtually be thrown into one apartment, when desirable for parties or assemblies. The stairway in the entrance-hall is enclosed above the landing, saving a large part of the cost of hand-rail and balusters. The piazza may, if desired, be omitted without impairing the general arrangement of the house. The kitchen is provided with every convenience. It is wainscoted with white pine three feet high, with a beaded heading. The second story, of which the floor-plan is shown in Fig. 3, is eight feet six inches high in the clear. It has three roomy chambers and a bath-room, and is amply supplied with closets. A flight of stairs in the hall leads to the attic, which is floored, but not finished, and may be used for storage. The inside, above and below, is finished in pine, treated with filler and two coats of shellac varnish. The sides are weather-boarded to the second story, and shingled above. The roof is also shingled. The chimneys are of hard-burned bricks, with terra-cotta tops. Such a house can be built in the vicinity of New York for $2,000 to $2,200.

FIG. 1. PERSPECTIVE VIEW OF COTTAGE.

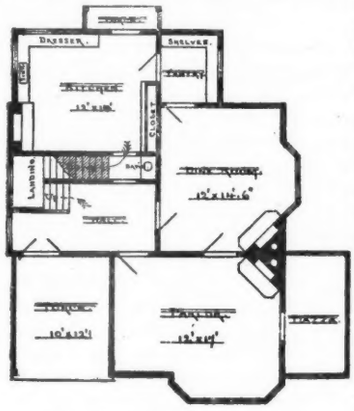


FIG. 2. FIRST-FLOOR PLAN.

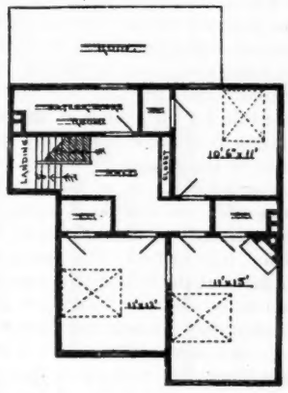


FIG. 3. SECOND-FLOOR PLAN.

The Uses and Abuses of Lime.—There are some persons who seem to be unable to get more than one idea at a time into their heads. Such are those who insist that lime is not a fertilizer but merely a stimulant to the crops and therefore injurious to the land. A stimulant is something that excites action, without contributing anything to sustain the force, and thus exhausts instead of strengthening. Alcohol stimulates but does not contribute nutriment; beef tea stimulates and supports at the same time, and yet one cannot live wholly upon this food. So with lime: it affords indispensable plant-food, for all plants contain more of it than of any other mineral, and it helps to decompose organic and mineral matters in the soil and thus makes inert plant-food available. This is its use. Its abuse is in using it to excess, and without adequate addition of organic matter. When it is used in rotation, once in four or five years—when manure is applied or green crops plowed under—then it becomes of valuable service; but the farmer who depends upon it alone abuses a good and useful thing.

SKILLFUL CULTIVATION OF A SMALL ACREAGE.

R. F. COLWELL, MASSACHUSETTS.

The too prevalent idea, that the more acres a man has in cultivation, the better off he is, is an exploded one. In case of grass farms in river bottoms, the more acres the mowing machine covers the better, but in the arable land the best is none too good, and only so much should be worked as may receive careful and skillful cultivation, so that each individual plant may receive just the food elements, sunshine and care that shall bring it to its highest development. There is no question but that many of the acres which are cultivated in the "AMERICAN AGRICULTURIST'S Prize Crop Series" will produce four or even six times as much as the lands of many farmers yield, who still cling to the old custom. It may be claimed by some that this careful cultivation applies more specifically to the so-called "garden truck" than to staples like wheat, but the writer hopes to show that by actual experiment it is especially true in case of the wheat crop. From returns recently made, it is shown that the interest on capital invested in farm lands, implements, and stock in the State of New York pays only an average of three and a half per cent. Under the pernicious system too often followed, our lands, once fertile, are steadily and rapidly losing their productiveness. In the State of Iowa, the corn lands yield now, on an average, twenty-two bushels per acre, and yet only twenty-five years ago the average yield was always forty, and in the early settlement of the State even more. This constant drain cannot be made every year without returning to the soil the elements taken away by the plants, and the question of fertilizing is one that must be answered intelligently, and should not be put off till the decrease of crop forces it to the notice of the producer.

There is great reason for hope in the large number of young men who are receiving in agricultural schools and colleges just such careful and scientific training as will bring about a change for the better. It is estimated that in the purely agricultural schools, and in the schools of science where agriculture is taught as a special branch,—and both of these in the aggregate number nearly one hundred—there are nearly or quite five thousand young men who will soon come out as trained farmers, horticulturists, or florists. Such a condition of things is heartily to be encouraged. When this same training, or a better one, shall be given for the next quarter of a century, we shall begin to do what England, France, and Germany have been and are doing to their highest profit. It is

admitted that theory alone is almost valueless, but given a man thoroughly educated both in the theory and practice of farming, and we may look confidently for such results as we expect from the skilled mechanic in any other branch.

Let us look for a moment at the results of this same skillful cultivation with the application of the food elements needed by the plant, on a small acreage. Two acres of strawberries have yielded $1,700, and the late E. P. Roe claimed to have realized over $2,000 on the same acre of land. In the Report of the New Jersey Horticultural Society the following items are interesting: An acre of early cabbage paid $435; one of tomatoes, $535; and Peter Henderson states that he knew of an acre of asparagus paying as high as $1,500.

From statistics compiled by the national government it seems that in the last five years the six staple grain crops have paid on an average less than ten dollars per acre, to say nothing of labor, men and teams, tools, insurance, etc., which must of necessity come out of the gross receipts. In the region of many of these grain crops, we admit that there was no market near by for asparagus or strawberries, but there must be grievous faults, somewhere and everywhere, if the yield is only equal to such a ghost of a crop.

Now as to the wheat crop alone: Professor Blount, of the Colorado Agricultural College, planted on a measured square acre, in drills eighteen inches apart, one and one-half pounds of wheat, and the yield was sixty-seven bushels. On a quarter of an acre he planted two pounds, and the yield was eighteen bushels, or seventy-two bushels per acre. When the usual amount is one and one-half bushels to the acre, with almost no preparation of the ground as to proper fertilizers and space between drills, it is easy to see how the wheat crop could be increased to such proportions as now would seem almost or quite miraculous.

Improvement all along the line must come sooner or later, and the sooner the better. When the prizes are distributed for which so many are trying now, and their methods are known, let every reader of the AMERICAN AGRICULTURIST resolve that next year he will do better than ever before, and seek his profits from a smaller acreage, whose cultivation shall be the very best that he can give.

REARING FALL CALVES.

JOHN M. STAHL, ILLINOIS.

All other conditions being the same, the cow that calves in the fall will give during the year as much milk as the cow that calves in the spring, provided both are well fed, watered, sheltered, and cared for. If poorly wintered, the cow that calves in the fall will be so reduced in milk-flow that pasture can have but little effect; while the well-treated cow will give only as much milk during the year when she calves in the fall as when she calves in the spring. Her milk or its product will yield the most profit when she calves in the fall, for then she is at her highest production when milk and its products command the best prices. This is likely to continue as long as the greater number of cows calve in the spring.

The fall calf has as much potential profitableness as has the spring calf; but to make it actual, more and better care is required. The most critical part of the animal's life is the first six months. During this period, the spring calf has pasture and favoring weather, but the fall calf has neither, and must therefore have the better care. My fall calves are generally supposed to be two years old when they are only eighteen months. To make them profitable, they must have extra care, which gives them increased value. I give them full milk until they are a week old. Then I change gradually to skim milk. After two weeks of age, as good a calf can be reared upon skim milk as from whole milk, provided something is added to take the place of the cream. For this nothing is better than oil-meal boiled to a thin jelly. Persons not accustomed to its use are more likely to use too much than too little of it.

At whatever season the calf is dropped, it is important to get it to eating solid food as soon as possible. It will learn very readily, if food is kept before it where it can see other cattle eating. The calf, like young animals generally, is imitative. Quite often green feed can be obtained for the fall calf. Clover silage is good for a fall calf. This also induces it to eat hay. Clover-hay is best for young animals. It is rich in the muscle-formers. For the grain ration, nothing has given me such good results as a mixture of two parts oats to one part corn, and one part wheat bran. The corn and oats should be ground very coarse; or if ground fine it should be fed on hay cut fine and moistened, or it is apt to pack in the stomach into masses very difficult of digestion. Barley may take the place of the corn, and oil-meal of the bran. This mixture should be fed regularly to the calf when it has reached an age of two weeks. Give the calf all it will eat for the first six weeks, but clean out its feed-box at least once a day, if it does not.

Do not forget that the calf needs salt as soon as its food is changed from full milk. It also needs water to drink. This is too often neglected. Milk is not sufficient to quench thirst. Many a calf lacks thrift simply because it has not water. Calves should be fastened while eating, or else fed separately, otherwise the strongest will get more than their share. But it is best to allow the calves freedom in a roomy shelter when not eating, and to give them outdoor exercise when the weather is not severe. The more liberty consistent with sheltering, the better. Enough litter to keep the calves clean is none too much.

SELECTION AND IMPROVEMENT OF SEED WHEAT.

PROF. J. W. SANBORN, MISSOURI.

It is true that wheat taken from a good to a poor soil will yield less than it did on the good farm, yet it will yield more than the seed grown on the poor soil will yield. It is true that seed taken from a poor to a good farm will yield more on a good farm than on the poor farm, but yet not as much as seed grown on the good farm; hence, all changes, as said, must be from good to poorer conditions if the party changing is to derive any advantage. These changes, of course, must be frequent—even annual if practicable.

We know that Northern-grown oats are heavy, and that when changed from Scotland to this country, from forty-five pounds or more per bushel, they yearly become reduced in weight. The facts brought out by the Colorado experiments under Prof. Blount and analyzed by Prof. Richardson, for the Government, show that all wheat carried to the Colorado College of Agriculture tended to a uniform production of protein. Those under thirteen and a fraction per cent of protein before introduced to that State, had, when introduced, an increase of protein, and those previously containing more protein became reduced in protein after a short stay in Colorado. I have given these few suggestions, based upon a little of the fuller data in my possession, that our farmers, in looking for improvement through seed, will consider that no seed can hold itself above the level of the conditions of their farming; at the same time giving some indication of what conditions the exchange of seed must rest upon.

Seed-breeding holds out much promise for our wheat-growers. I shall not now refer to production of new sorts, which belongs more to experts, through crossing. We have so many sorts that, like cattle, it is possible that more good will come through selection from the best we have than from new kinds,—at least, improvement by selection is the farmer's best method. We, as farmers, seem to strangely overlook the potency of seed-breeding, when compared to the value of cattle-breeding. The seed is of far more importance than the animal, and even the economy of feeding the animal must be measured by the cost of the seed. The laws of reproduction that govern the animal govern the seed, and are quite as marked in their influence on vigor, productiveness, ability to resist disease, quality, etc., etc. These qualities are as susceptible of being fixed by selection as they are in the animal kingdom.

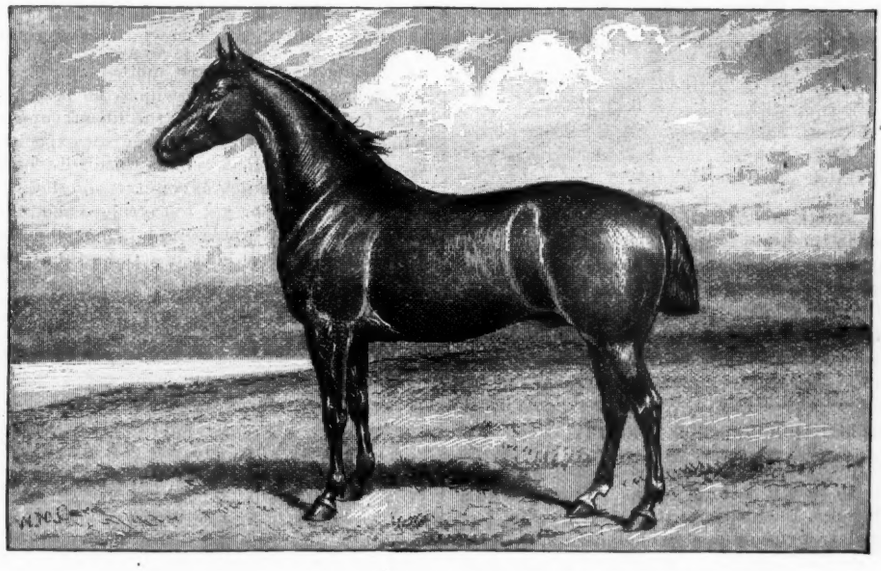
I have collected a large amount of practical data, showing that selection of seed works analogously to like procedure with animals. Stiffness of straw in a weak sort may be increased by selecting those in the field that stand most firmly. A non-rusted plant in the field amid rusted ones will likely have more resistant power than those rusted. Long, full heads are more likely to produce such heads than short ones. Really, the field is the place to select our grain, for there we can look the plant in the face. Seed can really never be selected properly except from the plant growing, as a study of the whole plant. A few hours' work each year would give us a constantly-progressive type of wheat, for each selection, however small, would soon become the basis of seed for the farm.

If we will not take this pains (as only a few of us will), then a resort to selection of the best seeds in the granary is the next best method. All experiments go to show that dense seeds of a large type are the most productive. The selection of this sort is quite available. Some use salt water, which floats out all light seeds. This method will not take out sure all seeds that are dense. The modern hand fan-mill will do this. The sieves will grade it into sizes, while a plenty of wind will blow out the light seeds. I have made use of these modern fan-mills for the purpose of perfecting the wheat crop, and ascribe to its free use something of the success in the increase of our wheat crop.

FRENCH COACH HORSES.

One of the noticeable features of the agricultural fairs this year is the increasing popularity of the French Coach horses, as shown by the large numbers exhibited. It is a comparatively new style of horse for this country, the first importations having been made within the present decade. The wide popularity already achieved shows that it is recognized by the American public as a useful and valuable acquisition. The light, active horse, which was so long the prevalent type, useful as it is in its place, has been found insufficient to fill all the wants of either farmers or city dwellers. On the other hand, the ponderous Clydesdale and Shire horses are more peculiarly fitted for hauling in cities than for general farm purposes. To supply the great need of a horse which shall combine moderately heavy weight with style and action, the French Coach horse, the Cleveland Bay, and, more recently, the Hanoverian Coach horse, have been introduced.

The French Coach horse is "made up" from crosses of the English thoroughbred with the Norfolk trotter and pure Arab. From the first-named there is sufficiently large infusion to justify the name of "*demi-sang*," or half-blood, by which the Coach horse is known in France. With this is mingled the blood of the Norfolk trotter, a large proportion of the French horses tracing back to Old Phenomenon, one of the most famous of Norfolk sires, and an occasional cross of pure Arab, directly from the Orient. The result is a well-formed horse, with clean limbs, stylish action, weighing from thirteen to fourteen hundred and fifty pounds, without racing qualities, either as a runner or a trotter, but handsome, and useful for carriage or farm-work. It fills the place between the light horse, kept for speed or pleasure, and the heavy, slow-moving draft horse. Both for pure breeding, and for crossing with native mares, the French Coach horse has already attained a well-deserved popularity among American breeders and farmers. We give herewith a portrait of the imported French Coach horse Franc Tireur 35, owned by Bowles, Hadden & Co., Wisconsin. He was sired by Serpolet Bai, dam Fille de Cœur by Phenomenon, son of Old Phenomenon. In his three- and four-year-old forms, he won many prizes as a trotter in France, and since his importation he has had a useful career in the stud of his owners.



THE FRENCH COACH HORSE FRANC TIREUR 35.

CARE OF HORSES IN WINTER.

"Poor thing!" exclaims one of Dickens's characters, a cabman, when, some mishap having befallen a woman in the street, she was being taken to a hospital. "Poor thing, indeed!" exclaimed his fellow cabman, not to be outdone in sympathy: "Why, I felt almost as much for her as if she had been a 'oss!" If farmers and others who have the care of animals could so far identify themselves with the creatures under their charge as to feel that they belong to the same great animal kingdom, and that they have much in common with them so far as the functions of life are concerned, it would save much suffering and loss. In breathing, for example, pure air is as necessary to the horse as to its owner, and the effect of deteriorating the air by breathing it is the same in both cases. Proper ventilation in the sleeping-apartment is as necessary to the health of the one as of the other. In an equal manner both require food to keep the body warm, and more of it, and of a more nutritious character in cold than in warm weather. A blow or a harsh word inflicts pain on both the horse and its master, though one writer tried to show that horses did not feel pain, as he had seen a horse grazing in a pasture while dragging its broken leg after it. No doubt that beasts are less sensitive to pain than man, just as some animals are much less sensitive than others. For example, we have seen a pig bitten again and again by a rattlesnake before the pig could put the serpent beyond the ability to bite by eating it. The pig appeared to suffer no injury from the poisonous wounds inflicted, and evidently enjoyed the meal which was the result of the conflict. On the other hand, we have seen a high-strung, spirited, well-bred Kentucky horse come to his death by a single bite from a rattlesnake. The point we would make is this: It would often be much better for the health, and decidedly better for the comfort, of our domestic animals, if those who have the care of them would occasionally "put yourself in his place" and ask themselves: "Now, would you like it if you were a horse, a bullock, or even a pig?"

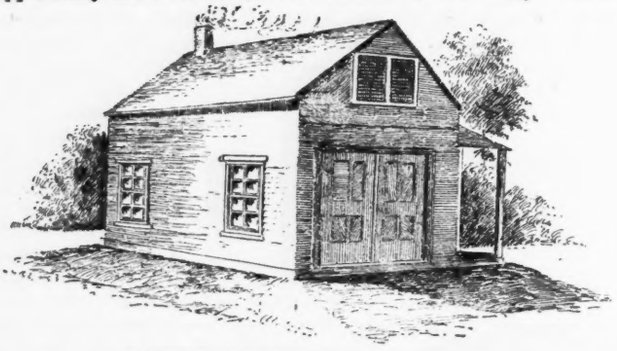
As already indicated, it is one of the functions of food—not the only, but an important one—to keep up the heat of the body. This is true of ourselves, as well as our animals. As the weather becomes colder, we aid the food in keeping us warm, by a change to our warmer clothing. The animals do this, to a certain extent, by thickening up the covering of hair, fur, feathers, etc., with which nature provides them. If those who clip their horses in midwinter, and then let them stand unblanketed, could take the opinion of the animals, what do they think it would be? But then it looks so pretty to see a horse neatly clipped. Nails and a hammer properly applied will often convert a rickety barn into a warm one, and save hay and other food. Do not wait until one of the best horses is reported lame from a fall on an icy road before looking to the condition of the feet. Have all the horses properly shod and kept sharp all winter. It is cruel to expose the animals to the chance of painful falls. Grooming should not be slighted in cold weather. Grooming in the stall is bad for the horse, and the man who does it cannot get around the animal to do thorough work. In slushy weather, when the roads are bad with wet snow, give the legs of the horses a thorough rubbing, first with a wisp of straw and afterward rub dry with a piece of old carpet, or some such fabric. Give the heels especial attention.

Soiled bedding should be removed from the stalls in the morning, and not returned until late in the afternoon. On pleasant days expose it at a sunny place in the barnyard. Have a shed where it can be kept under cover. Fortunate is he who is not obliged to be saving with his bedding. He need not be who followed our advice to gather forest leaves in abundance. Soiled bedding gives off ammoniacal vapors, which are injurious to the eyes of the animals, as well as their health generally.

Spreading Manure in the Winter.—Manure made in the winter should, when it is possible, be spread as it is made, on the land where it is to be used. It is a fact that cannot be controverted, and has been abundantly proved, both by reason and practice, that manure is never worth more than it is the day it is made. Nothing is added to it, but usually much is lost from it by lapse of time. Except on steeply-sloping ground, the manure is safe from all danger of loss, and is put where it will do the most good when it is spread on the land direct from the stable. There is no more handling of it, and if it is rained upon all that is dissolved from it goes into the soil, just where it is wanted. Hence it is a convenience and an economy to haul out the manure and spread it as soon as a wagon-load is gathered.

SMOKE-HOUSE AND SUMMER KITCHEN.

The accompanying illustration shows a very cheap and convenient farm building. It is eighteen feet long by sixteen wide, with posts fourteen feet. Clear height of lower story, nine feet. A balloon frame may be used, or the building may be boarded up and down, where low cost is an object. The one shown herewith is sheeted and weather-boarded. The doors are in the north end, each three and one-half feet wide, making the doorway seven feet wide. In summer, when these are thrown open, the room is airy, and there is room for carrying out tubs, etc., and often a hogshead is wanted in the room. There are two windows on the east side, with inside shutters. Along the west side is a porch six feet wide. This shades from the afternoon sun, and is just the place for the morning work. The double window above the doors is fitted with a tight shutter on the inside, swung on hinges; this may be closed, and meat hung in the upper story, the meat-room, all summer. The hooks for the meat are driven into the rafters. The stairs from the lower to the upper story are in the northwest corner. The chimney is in the



COMBINED SMOKE-HOUSE AND KITCHEN.

south end, with fireplace in the lower room. In the upper room is an opening with a damper swung above it. When the meat is to be smoked the damper is raised, closing the chimney above and opening the aperture into the upper room. At other times the damper is kept down, closing the aperture. A door opens upon the porch, and there is also a window on the west side. A covered walk may lead to this house from the dwelling.

IMPROVED FEED-TROUGHS FOR POULTRY.

Soft poultry-food thrown on the ground or on a board is quickly trampled and befouled so that it is unfit to eat. Placing it in a shallow pan or trough helps the matter little, if any. The best course is to use covered troughs or pans which permit them to obtain the food and at the same time keep them out of it with their feet. For small chicks, a double trough is made of tin, as shown in Fig. 1. It is twenty-eight inches long and four inches wide—each half being two inches wide—and one and one-half inches deep, with square ends soldered on. Tin is best, because it is easily

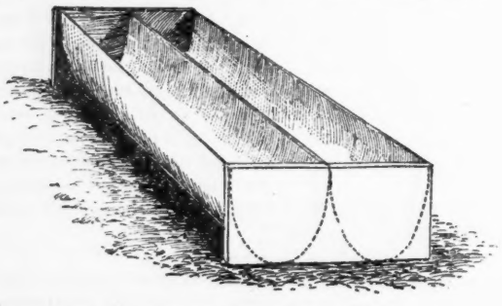


FIG. 1. TROUGH FOR SMALL CHICKS.

washed and kept clean. This trough is set inside of the box, seen in Fig. 2, the same in width and length, inside, and eight inches high. It has a hinged cover fastened down with a hook, and handle to lift it about by. Each side is open and fitted with wire bars placed two inches apart, each end of these wires being bent at right angles, driven through the strips of wood and clinched. The food is placed in the trough by raising the cover of the box. A tight cover is necessary to protect the food from their droppings when they jump on the box and make a roost of it, which they are certain to do. Feed at one time only as much as they will eat up clean, and keep the trough well washed out. Nothing is more productive of mouth, throat, and bowel diseases in chicks than soured and musty food, or a filthy feed-trough. Fig. 3 is a wooden trough for feeding grain and other dry food to grown fowls, or for placing bone, gravel, shell, etc., in. It is hung about eight inches above the floor, upon two large nails driven into the wall of the poultry-house or other building. The wire bars in the cover are three

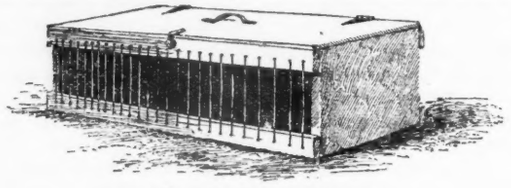


FIG. 2. BOX FOR TROUGHS.

inches apart, bent, driven into the strips and clinched, same as in the other box. The cover is hinged so that it can be raised when the trough needs cleaning out. It inclines at such an acute angle that the fowls cannot make a roost of it, and the food is kept perfectly free from all impurities. It is about four inches wide and can be made of any desired length. This trough takes up very little room, and is especially useful for keeping granulated bone, gravel, shell, etc., in. No poultry-house is complete without three or four of them.

THE SILKWORM CRAZE AND ITS REMAINS.

COL. F. D. CURTIS, NEW YORK.

When our fathers and mothers were young, there was a silkworm craze compared to which the present one is only a spasm. True, the present effort has the liberal support of the Government, while the old one had to live on great expectations, based on big stories. The truth is that "silk culture" (it sounds taking) must be confined to special sections of country, and those of limited area. It must not be too hot, nor yet too cold. Labor must be cheap, and all the conditions favorable. When the old enthusiasm was up, everybody, almost, took hold in our locality, and the white mulberry trees (*Morus alba*) are still growing here and there about the town,

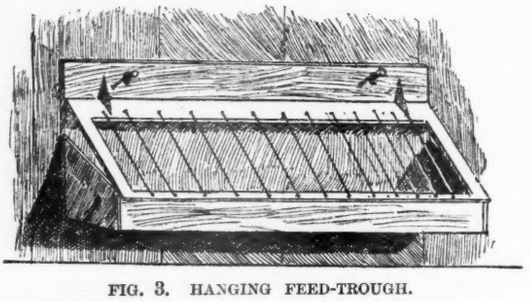
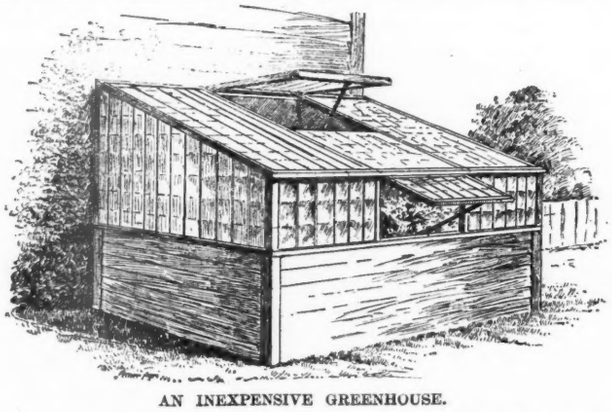


FIG. 3. HANGING FEED-TROUGH.

relics, and all there is left (unless it is some rare garret furniture) of the interests and hopes which the townspeople once had in silkworms. At Kirby Homestead there was once a row of these trees along the roadside, but they are all gone, years ago. The few that are left are looked at by the present generation as curiosities, and each generation of new-comers inquires what they are and what they are for; but not so with the few grandfathers and grandmothers, for to them they are mementoes of money and enthusiasm they spent. All gave up the enterprise after a few years, beginning with a few worms, at a big price, and trees well paid for, which were set for future emolument, but which made poor firewood. One Irishman, a spinner and weaver in the old country, hung on to his worms till his trees grew up, and then spun his cocoons into thread and sold it to the neighbors. In those days so much was not expected as now, and people were satisfied with small returns; but the labor was more than the returns for all the worms could do, and then, again, the climate was unsuitable. There was too much cold and wet. Silk culture, with cheap Chinese labor, ought to succeed in California; but in the Northern States (judging from the experience of the Charlton people, who were not lacking in enterprise or perseverance) it will not succeed. Attempts will only be wasted energy; but everybody does not know these things, and all think they can do them. Good advice is, therefore, often thrown away. People read glowing accounts of certain fruits, and they imagine they have only to invest in them, and the glittering tale is told. After a while they find out just what others have found out before: that they are good for nothing in their locality, or perhaps anywhere.

A CHEAP LEAN-TO GREENHOUSE.

If those who cultivate house-plants knew how much better they can be grown in a room by themselves where the temperature and moisture can be regulated to suit their wants, there would be more small greenhouses. The idea seems to prevail that even a small greenhouse costs a great deal. It is possible, and easy, to build a lean-to house eight by twelve feet, and eight feet high at the highest part and five feet at the lowest, for less than a hundred dollars. In a house of this size all the plants can be grown that most amateurs would find time to take care of. Of course it would be necessary to furnish the heat for such a house from the dwelling with which it would have to be connected by double doors, which could be thrown open at night. The walls can be made of posts set in the ground as one would set fence posts, taking care to set them low enough to reach below the frost-limit, to prevent heaving. These should be set about two feet apart. All the posts should be of the same thickness. They should be boarded up, outside and in, with cheap, matched lumber, over which a layer of tarred sheathing-paper should be tacked. Then give the inside a ceiling with cheap lumber, and the outside a finishing of clapboards. In this way you get snug walls, with an air-space between, which will keep out frost more effectually than a brick wall. The vertical sash can be made like regular window-sash, or strips can be fastened perpendicularly into which glass can be set, lapping it as is commonly done on greenhouse roofs. If this is done, the strip will have to be rabbeted out to the depth of a quarter of an inch on each edge on the side from which the glass is to be let in. They can be fastened in place according to the size of glass used. The glass should not lap more than a quarter of an inch, and should be held in place by double-pointed tacks, which can be



AN INEXPENSIVE GREENHOUSE.

set so as to hold the glass up and prevent its slipping in the least, by putting one point under each lower corner. After tacking, it is well to go over it with a putty-bulb, and spread on white lead and putty, made thin enough to run, by mixing it with boiled oil, one-third of each. The roof should be made in the same way. A sash should be arranged to lift on the roof, also at the end, for ventilation. These can be lifted by curved irons in which there are holes made to slip over staples, thus enabling you to fasten the sash at any point.

A floor is not desirable; simply pounding the earth down firm and hard will do quite as well, and better, in fact, as the soil will absorb water—which it will afterward give off in moisture. The benches or shelves should be about two feet and a half from the bottom. Two or three can be run across the ends. A table or stage for plants may occupy the center of the room. Two or three hundred plants can be grown in such a greenhouse, and they will be much more healthy and vigorous than any kept in living-rooms. It will be the pleasantest part of the dwelling.

Wheat Notes. — The yield of a single grain of wheat is never less than forty-fold under favorable conditions, and when sown thin, it should be much greater. Every pound of wheat should produce a bushel in all sections where wheat is successfully raised. In rainy sections the portion of starch in the grain increases three or four per cent, while the gluten decreases in a similar proportion, compared with dry regions like Colorado. The three superficial coverings of wheat constitute the bran, while the next three layers are composed of gluten, the most valuable part of the grain. It comprises ten to sixteen and one-half per cent of the grain, and the more gluten there is in the wheat, the better its quality. The middle of the wheat grain is mostly starch, comprising about sixty-six per cent of its bulk. The starch grains are built up into columns of irregular cells, each one of which is enveloped in a coating of woody fiber that materially interferes in the milling. The dark germ and the brush on the end are scoured off in milling, because they make the flour dark-colored. It will thus be seen that the wheat grain is more complicated than any other cereal, so that the most intelligent management is absolutely necessary to secure the greatest possible yield of the best quality. [Prof. A. E. BLOUNT.]

IMPROVED FORMS OF BRIDGING.

Mr. Miles Banes, a working builder and millwright of Clinton Co., Pa., furnishes sketches and descriptions of two very effective methods of bridging floor-beams, from which our illustrations were engraved. Shingling laths, set edgewise, are used, the upper ends

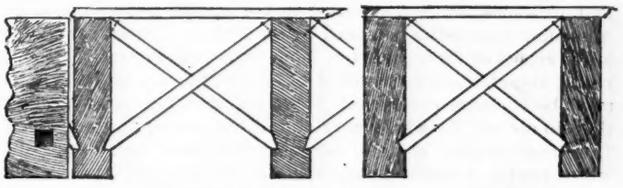
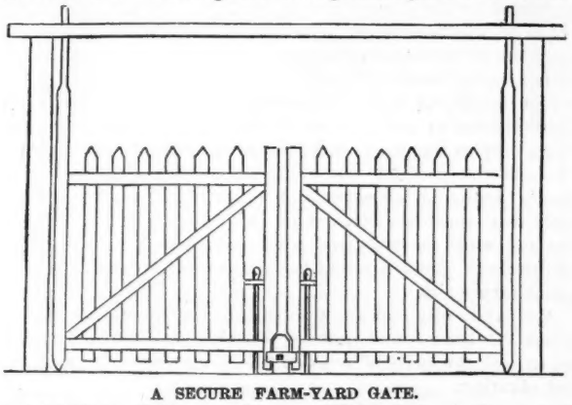


FIG. 1. TWO FORMS OF BRIDGING. FIG. 2.

being cut to the proper bevel to fit snugly on the side of the joist. In the form shown at Fig. 1 the lower end is also beveled to fit into a notch. In the form shown at Fig. 2 the lower ends of the bridging are square and corresponding notches are cut in the joist to receive them. At the left of the engraving is shown a section of joist with a notch cut. In either case no nails are required in the lower ends of the bridging, and the notches may be cut in about the same time required to nail when used without notches. The top of each piece is toe-nailed. Where bridging is made in either of these forms the shrinking of the joist only serves to make all tighter.

A CONVENIENT FARM-YARD GATE.

The illustration, a sketch of which was sent us by J. W. Graham, N. C., is a simple double gate frame, made to open either way, and closed in the following manner: Midway between the gates is a short post firmly driven in the ground, or mortised into the ground sill, on both sides of which is a large "button," as shown in engraving. These "buttons" are fastened to the post by a small iron bolt with head and nut and washers, and turn with some difficulty. When the gate is to be opened either way, turn the "button" vertical on the side toward which the gate is to be opened, and both gates are at once free to open that way only. Near the lower and outer corner of each gate is a contrivance for keeping the gate in position after it is opened, which may be used to help keep it firm when closed. It consists of a small piece of timber as broad as the gate-frame and about an inch and a half in thickness, through which is an auger-hole; and in this is the cylindrical piece, which should be pointed on its lower end. It then passes through an auger-hole in the lower



A SECURE FARM-YARD GATE.

horizontal piece of the gate-frame. When the gate is open sufficiently wide the iron-shod peg is stuck down in the earth, and the gate is thus held in position. Both gates are furnished with this device.

Too Much Isolation.—Farmers are too much like isolated points. They must touch each other oftener and closer if they would improve as they should, industrially, socially, and politically. Let us draw in our elbows and push out our shoulders.

RAILROADS AND FORESTS.

W. D. BOYNTON, WISCONSIN.

Comparatively few people have an adequate idea of the amount of timber annually consumed by our railroads. Fewer still may forecast the ultimate demands of railroads upon our forests, under the present or prospective rapid increase of extension. At the close of the year 1886 we had 137,500 miles of railroad. At the close of the year 1887 we find that this had increased to 150,000 miles. Allowing the same rate of increase from 1887 up to the close of the present year of 1889, we find the present grand aggregate of 179,000 miles of railroad in this country. It is computed that from sixty to seventy thousand feet of timber are used in the form of ties for each mile of road-bed. Putting it at 60,000 feet to the mile, we find that 10,740,000,000 feet are used in the 179,000 miles of roadway. According to statistics compiled by the Forestry Division, and given in the report of 1884, these ties have an average duration of seven years; therefore, one-seventh of 10,740,000,000, or 1,534,285,714 feet, must be replaced each year! These are startling figures, and yet they do not tell the whole story of railroad consumption of timber. The trestle works, bridges, depots, warehouses, and rolling-stock will consume a vast quantity upon which it would be difficult to estimate with exactness. We may safely say, however, that it would swell the above figures fully one-third.

It should be borne in mind, too, that in estimating the timber-cut of the country these railroad ties have not been taken into consideration to any great extent. It has been the custom to take the figures of the manufacturing establishments, or the scale taken at the rafting-places located on the various systems of rivers in the country, to arrive at the aggregate cut. However taken, it is usual to show the product of *sawed* lumber put out in marketable form. Now, these ties are largely *hewn* out of the small, round timber, and are furnished in large or small lots from every timbered corner of our country. Our whole forest area is already laid under tribute to furnish these ties, of which little account is taken in estimating the timber-cut of the country. Those ties that are sawed fall, of course, into the general estimate secured through the figures representing the output of our mills.

It must be further considered that as the great bulk of these ties are taken from young, growing timber of suitable size—from eight to twenty inches in diameter—there is, in reality, a vastly greater consumption, or loss, than is expressed by the figures given above. These young trees are cut before they have attained half their natural growth; and it is not hard to understand how the removal of one million feet of such timber may make a greater hole in our future forest supplies than would the removal of two millions of feet of fully-grown timber.

Here, alone, by this one great industry, an almost unlimited market will soon be created for timber-growers. The railroads cannot be much longer supplied from the remnants of our native forests. Our farmers and landowners should "stick a pin here." The man who plants ten acres of timber now is making a substantial investment for the future.

Let us see how many such plantations would be required to supply the 68,000,000 ties annually demanded to keep in repair our existing roads, allowing a yield of three hundred ties to the acre. We find that 22,666 such plats must every year pour in their harvest of 3,000 ties each; and as about fifteen years' growth are required to bring a crop to the proper size, we must multiply this 22,666 by fifteen, and the product represents 339,990 ten-acre lots—so many farmers producing ten acres each every fifteen years wherewith to supply this enormous demand of the railroads for ties alone! Is there not some necessity and some inducement for the farmer to plant timber? Must it not at no distant day become a part of his regular farm-work?

We can hardly look for a substitute for the wooden tie. Nothing has yet been found quite practicable that did not greatly exceed in cost the price of wooden ties, even when produced by artificial planting.

RAILROADS AND FOREST FIRES.

Notwithstanding the great present and prospective wants of railroads in the matter of timber supply, there is no other one agency, unless indeed it be the lumberman, that needlessly destroys such an immense amount of valuable timber. Such destructiveness and improvidence seem incredible, yet it is a statistical fact, that millions of acres of valuable timber are annually destroyed by fires originating from flying sparks from the railroad locomotives. That such fires are avoidable has been plainly demonstrated. In our manufacturing towns, mill-men and manufacturers are obliged by ordinance to provide and use spark-catchers for their smoke-stacks, thus avoiding all danger of fire from that source.

Since railroad men seem utterly reckless and unconcerned in the matter of wholesale fire-spreading, we should have stringent and rigidly-enforced national or State laws to oblige them to provide and use, when necessary, adequate appliances to prevent the wholesale firing of our forests. The immense losses annually entailed upon individuals and the public at large make neglect upon the part of railway officials a very grave offence indeed. It is a positive crime, and should be so regarded and punished.

According to the census report of 1880, 1,100 forest fires were traced to the burning of felled trees and brush-wood by settlers in their clearings; 500 to sparks from locomotives, and sixty-two were reported as kindled maliciously. We are thus enabled to charge about thirty per cent of our forest fires to the railroads.

WHEN SHALL WE GET BETTER MEAT?

JOSEPH HARRIS.

A city friend asks us this question. We cannot answer it. If it will be any consolation to him we can tell him that he gets better meat in the city than we do in the country. The country butcher buys his animals from the neighboring farmers, and pays them back in their own coin. They ought not to grumble at this, but the fact is that when he gets some "well-favored kine and fat-fleshed" he sends them to the city, while we have to be content with "the poor and lean-fleshed," such as Pharaoh saw in his dream. But it is no dream to us country dwellers. We are eating more beef, mutton, lamb, and veal and less pork, and we should eat more if our beef and mutton were as well fed as our pork. But this is far from being the case. Our pigs get corn and are fat, but there is not fat enough on much of our beef and mutton to taste it, and our steaks and chops are made eatable by the liberal use of butter. If we were obliged to answer our friend's question "When shall we get better meat?" we would say:

1st. When we have better-bred animals. Cattle and sheep not kept principally for milk and wool, but for beef and mutton.

2d. When we stop starving our calves and lambs, and feed liberally from the start to the end.

3d. When we feed better grass. Our pastures are often disgraceful. If land is too rough to plow and too poor to grow white beans or buckwheat, we keep it in pasture; or if it is naturally rich, alluvial land, we let the water drown out the valuable grasses, and weeds, rushes, and coarse grass take their place.

4th. When we make a regular business of fattening a few cattle and sheep every winter.

5th. When people are educated sufficiently to know good meat from bad—especially to know fat from tallow.

6th. We will not say that we shall have better meat when people are willing to pay for it. In all conscience, the butchers charge us enough now! People are willing to pay a good, even an extravagant price for good meat, if they are certain of getting it. But the truth is that we pay big prices for poor meat. We often see beef and mutton sold for fourteen cents per pound that, as compared with good, well-fatted beef, is not worth five cents a pound. From sixty to seventy per cent of it is water. After deducting the water, the bone, the tough skin, the hard sinews, gristle and tallow, how much tender juicy, nutritious flesh and fat are there left? A friend of ours, who is somewhat hasty in temper, was carving such a piece of beef, when he suddenly jumped up, taking the beef with him on the carving-fork, and rushing to the butcher-shop threw it at the head of the man who sold it to him. We could almost wish that every butcher who sells such stuff could be served in the same way—or, better still, we wish people knew what good meat is, and would stop buying poor lean meat at any price. Let the sausage-makers have it, or the manufacturers of fertilizers.

7th. We shall have better meat as soon as we learn that putting butter on a dinner table is neither "stylish" nor economical. This practice of having butter at dinner, joined with the inability to tell tallow from fat, is one of the chief reasons why many people object to fat meat. They do not know that fat is fully as nutritious as butter, and far more palatable than poor butter.

Distilled from Experience.—Science is drops distilled from experience and observation hardened in the fire of criticism, and often strung on theories. The string may break, but science is nevertheless a certainty, and a live, not a dead one, to the wise farmer.

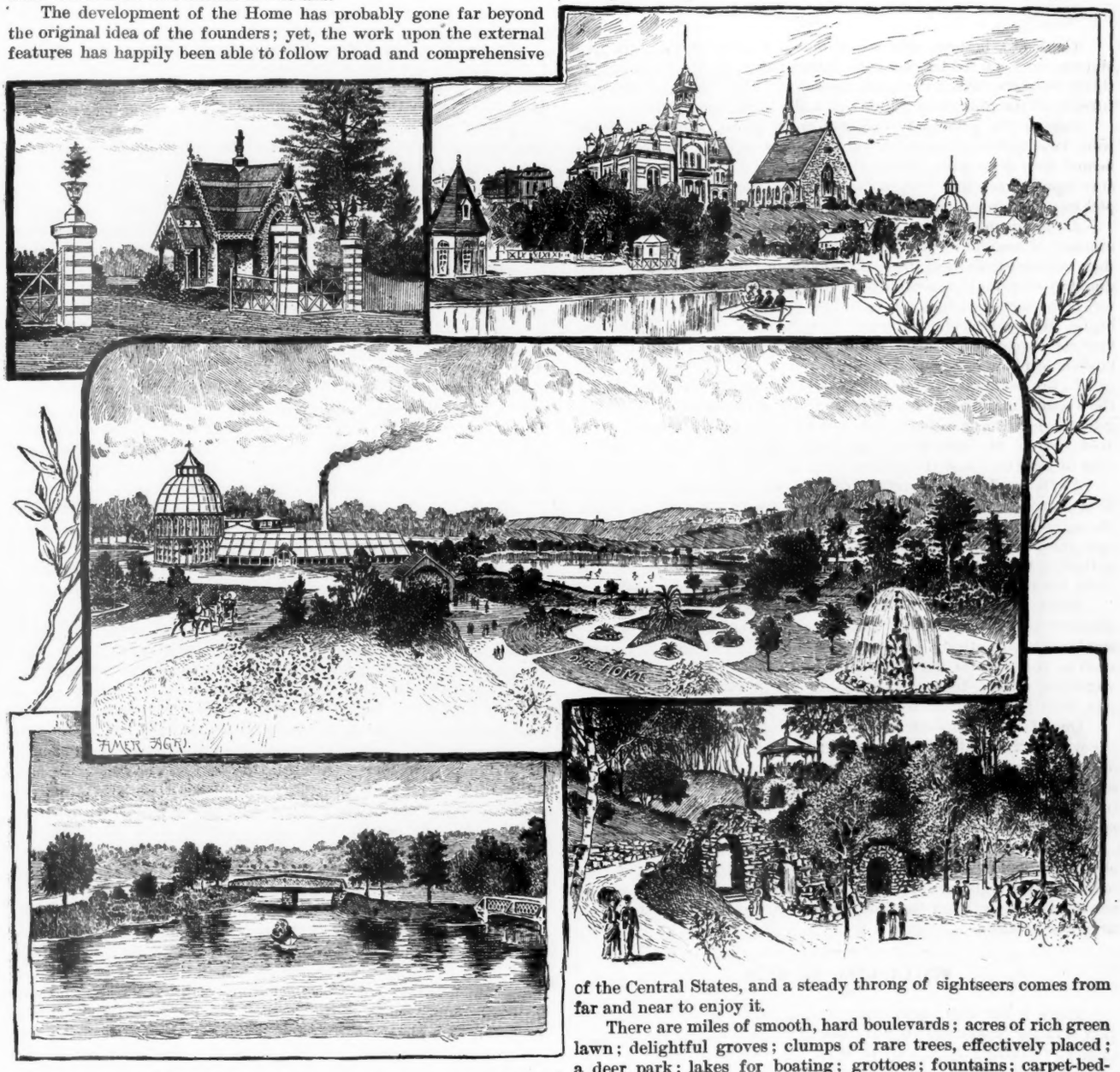
ONE OF OUR NATION'S FARMS.

Some three miles distant from and overlooking the city of Dayton, Ohio, and the fertile valley of the Miami, is located the Central Branch of the Homes which the Government established for disabled soldiers after the close of the civil war.

The site comprises some six hundred acres of rolling ground, which twenty years ago was but ordinary farm and woodland. Now grassy lawns, intersected by broad avenues, beautiful artificial lakes, and ornamental landscape-gardening of every description, make a fit setting for the substantial and commodious buildings that shelter some five thousand veterans.

The development of the Home has probably gone far beyond the original idea of the founders; yet, the work upon the external features has happily been able to follow broad and comprehensive lines from the beginning. The grounds were first laid out under the direction of Chaplain Van Horne, of the regular army, who was detailed by the Secretary of War for the purpose. No better encomium could be passed upon his work than that the professional landscapist who has succeeded him has not been compelled to materially alter his lines, but only to enlarge upon and develop them as increased facilities for the work were placed at his disposal.

Following the original designer, there came to the Home, as an inmate, early in its career, a man practiced in the best methods of European horticulture—a member of the family of a florist and landscape-gardener, under the Grand Duke of Mecklenburg-Schwerin. Recognizing the decorative value of the native trees and shrubs, he was instrumental not only in having carefully preserved such as were upon the grounds, but he secured many specimens from the adjacent woodlands, and used them with great discretion. About fifteen years ago the Board of Managers, realizing the importance that the landscape features of the Home were assuming, employed as superintendent of the grounds a professional landscapist, Mr. Charles Beck, who has remained continuously in charge since then, and who has found the work growing upon his hands to such an extent that it has compelled him to abandon all other professional engagements, in order to devote his whole time to this. So well has he succeeded in making the Home "a thing of beauty" that it is now famous as one of the "show places" of the Central States, and a steady throng of sightseers comes from far and near to enjoy it.



VIEWS OF THE NATIONAL SOLDIERS' HOME.

There are miles of smooth, hard boulevards; acres of rich green lawn; delightful groves; clumps of rare trees, effectively placed; a deer park; lakes for boating; grottoes; fountains; carpet-bedding and ribbon-work in rare profusion; large greenhouses, and a palm-house containing many fine specimens.

One point that has been of advantage in bringing the grounds to their present high state of cultivation is the abundance of labor always at the control of the superintendent. The policy of the managers is, and has been, to afford employment to such of the inmates as desire it, and are at all able to perform bodily labor. It is better for them, physically and morally, than to lead a life of enforced idleness; and, besides, gives many of them an opportunity to help support their families, who are living elsewhere. The men are not paid large wages, about $7.50 per month being the average, but they do not work very hard nor very long hours. It must be remembered that most of the survivors of the late war are now fast

becoming old men; and that such as make their home here have been admitted because incapable of hard labor. The superintendent does not claim that the work is done to the best financial advantage, but rather points to the work accomplished with such material.

The agricultural operations of the Home are of some interest, being mainly carried on with the view of providing as much of the food supply of the institution as is possible. Thus, out of about two hundred and forty acres under cultivation, about eighty acres are devoted to the vegetable garden. Of the remainder, the following table shows the grass and grain acreage, together with the crops harvested therefrom the present season:

Wheat	28 Acres.		803 Bushels.
Rye	6 "		127 "
Oats	32 "	(estim'd)	1,000 "
Meadow	52½ "		108 Tons.

There are, besides, eleven and one-half acres of hill corn and sixteen acres of fodder-corn, the latter being used for soiling the thirty-two cows which comprise the dairy. This, however, does not furnish all the milk, fifty gallons of milk being bought daily.

Among the principal vegetable crops grown this past season were twenty-five acres cabbage; ten acres sweet corn; ten acres beans; four acres peas; five acres tomatoes; one acre onions; one acre squash; one and one-half acre beets; one acre cucumbers for pickles, and large quantities of carrots, celery, asparagus, etc.

Although this means a pretty good-sized garden, a glance at the amount of vegetables needed for a simple meal will show that it does not more than meet the requirements of the Home family. The quantity of a single vegetable for dinner (one vegetable besides potatoes being served each day) is as follows: Beets, fifty bushels; green beans, eighty bushels; cabbage, forty barrels; peas, seventy-five bushels; sweet corn, seven hundred dozen; besides which, forty bushels of potatoes are used each day.

To provision one such family would be a pretty fair business for the average market-gardener. Yet, beside supplying the table with green vegetables in season, they put up for winter use three hundred barrels of sauer-kraut and eight thousand one-half-gallon cans of tomatoes, and the pickles from the acre above mentioned.

As the garden never suffers from the want of available labor, it is of course kept in excellent condition, clean and well-cultivated throughout the season. From forty-five to fifty hands is the average number given employment in it. Owing to the method of gathering the crops, each day as needed, no record is kept of the yield, but it is safe to say that they are almost invariably good.

Beside the thirty-two milch cows, twenty-one horses and nineteen mules are kept on the place, and the manure from the stables is used entirely upon the vegetable garden, excepting that used as compost for the flower and plant beds. The garbage and vegetable refuse—tops, roots, etc.—are composted in deep manure-pits, with forest leaves, forest soil, etc.

One of the most noticeable features regarding the grounds and the work is the neatness and thoroughness with which all operations are conducted. It being a military post, the military spirit pervades everything, and matters are not left at loose ends. A written report of all agricultural operations is made to headquarters each day, specifying the number of men at work, and the work accomplished.

Of the series of views on the preceding page the central portion shows the conservatory and garden; above at the left is the gate lodge; at the right are the Memorial Hall and church. Below at the left is a view from the lower lake; at the right are the stone arch and grotto.

WINTER CARE OF BEES.

There is but little opportunity during winter to give bees attention, and the proper time to put them in shape is during the autumn months. Feeding should all be done before cold weather sets in, and they should be settled in their winter quarters before real winter is at hand. It often occurs that winter overtakes us with colonies that lack food. In such cases we cannot possibly use syrup for food, as the weather is too cold for the bees to seal it over, and unsealed stores will not serve properly for winter. The moisture which always arises from the bees in cold weather enters the unsealed honey and dilutes it, making it very unwholesome. Our only resort, therefore, for feeding in cold weather is to make candy and use it. This is a very good and healthful food if properly made and administered. It is made from granulated sugar by melting it, adding a little water—no more than will thoroughly melt the sugar—when it is boiled a few minutes and poured out into cakes or slates of three or four pounds each. When cool this becomes very hard, almost like rock candy. In feeding this it is placed on frames just over the cluster of bees where they can have access to it at all times. When in this position it receives the heat arising from the bees and they remain on it all the time. It is so hard that it will last them a long while. This candy may be given bees at intervals during winter, and colonies may be brought through in good shape that would have otherwise perished. This, or any other work that is necessary to do with bees in winter, should be done on warm days. It will not do to molest them on a cold day, but it should always be done on days when the bees are flying.

THE ORIGIN OF SWAMPS.

RALPH S. TARR.

In the Northern States swamps are so common that one can rarely travel more than a few miles in the country without coming upon one. South of a certain line which follows an irregular course from New Jersey through Ohio and westward, swamps are much less common. Of course it is easy to say that swamps exist because the drainage is imperfect, and therefore the land is overflowed; but this is only a part of the reason for swamps, and simply leads us to the important question, why is the drainage imperfect? The tendency of all streams is to conduct the water away to the sea by the easiest route, and in doing this it generally cuts a channel of such a depth that there is no swampy land excepting on the banks or in the flood-plain of the river.

Let me state here that the northern part of our country was once capped with a very thick sheet of ice. I shall have to make this statement without giving proof of it, for I have not the space to give to the proof, although it would be an easy matter to prove it satisfactorily to any intelligent man. The time since this ice period is variously stated at from fifteen thousand to a hundred thousand years; but that is a matter of little importance in our inquiry. This ice-sheet was in the form of an immense continental glacier hundreds of feet in thickness, very much like that which now covers Greenland, only much more extensive. Like the Greenland glacier, it slowly moved from north to south, gouging out the earth beneath it and grinding the rocks to powder. When the ice melted, the surface of the country was greatly changed from its former condition. The old river systems were changed, dams of earth were deposited by the melting ice across river valleys, and the drainage was in a state of confusion, from which it has not yet fully recovered.

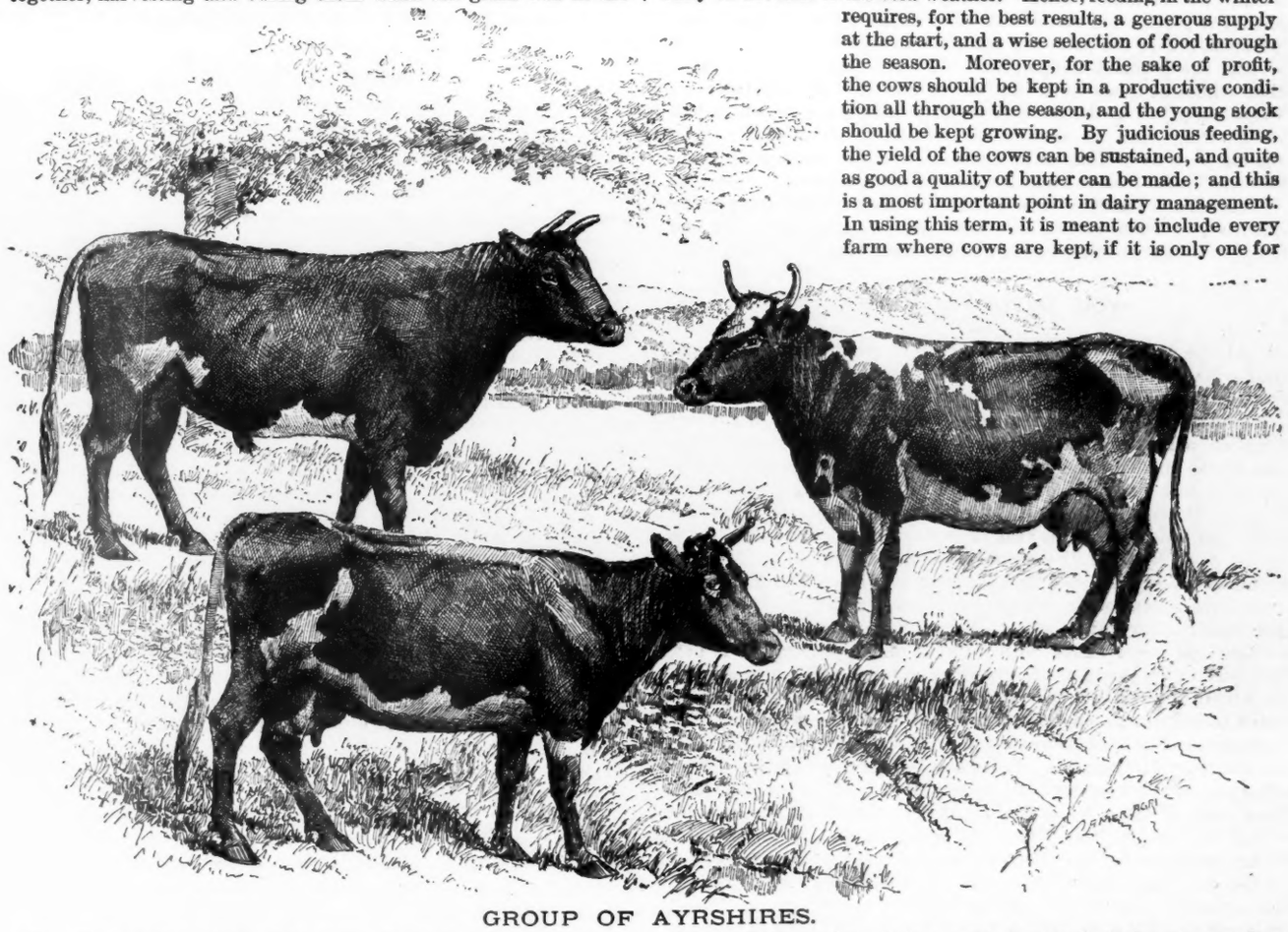
When the ice had gone, the surface of the country was dotted with thousands of lakes and ponds, and the streams flowed from one lake to another. Each stream carried quantities of mud and sand, for they were all busy in wearing channels in the loose deposits left by the glacier. As long as the current was rapid, the mud and sand were easily transported seaward; but when the water slackened in speed, as it always does when it enters a pond or lake, the sediment was deposited. In this way the ponds have been filling up little by little ever since the close of the glacial period. Some of the shallow ones are already filled, others are partially filled, and many remain very much as they were when the first great ice-sheet disappeared.

At first the pond is filled up only by the deposit of inorganic sediment. Soon, however, the water is shallow enough to admit of the growth of certain fresh-water plants, and these by their decay add to the accumulations on the bottom. Lilies, sedge-grass, and finally a score or more of plants, take root and all aid in converting the lake to a swamp. An important aid in this work is sphagnum moss, which at first grows on the borders of the pond, then little by little encroaches on the water until it has formed a sheet perhaps extending completely across the pond. Quaking bogs represent this stage when sphagnum has grown over the pond, but has not by its decay made a solid core. In some places, as in Ireland, quaking bogs of this character are very dangerous, for a man may easily sink in it and disappear forever. In working the peat bogs, skeletons of horses, other animals, and even of men are found in these places several feet beneath the surface, where they have sunk during an unfortunate attempt to cross the bog.

It is in this way that lakes and ponds are changed to swamps, and all bodies of fresh water are slowly tending in the same direction. The final stage is the drainage of the swamps, for the streams are always busy, and it is their work to remove the water. In doing so they wear channels down into the earth. When these channels have cut below the swamp, the waters will be drained off, and where once was a lake will then be dry ground.

AYRSHIRE CATTLE FOR THE DAIRY.

A short distance beyond the city limits of Elizabeth, N. J., is the fertile and pleasant farm of J. O. Magie & Son, with its pure bred Ayrshire herd. Three animals from that herd are portrayed herewith. The cow at the left is the prize winner, Mary Gold; beyond her is her son King Waverly, two years old; and at the right is the highly successful cow, Flora Drummond. The herd is not a large one, but its foundation stock is carefully selected, and the system of feeding and care is designed to promote health and vigor. There is no pampering or hot-house growth, but methods in accordance with the northern origin of the breed, and which would perhaps be regarded as too rigorous for a race of cattle from the lush pastures of Holland, or the soft climate of the Channel Islands. For several successive seasons Messrs. Magie & Son have sown oats and peas together, harvesting and curing them while the grain was in the milk. During the winter this is run through a feed-cutter and chopped into half-inch length, moistened and fed to the herd. The cutter is run by a mature bull in a tread-power. While the bull is thus made useful, the exercise is conducive to his health and appetite. The mixture of oats and peas with the straw and haulm make a very well-balanced ration. The near-by city of Elizabeth furnishes a ready market for all surplus milk.



GROUP OF AYRSHIRES.

The Ayrshire breed has taken a well-defined place in American husbandry. While, on the one hand, no one expects from an Ayrshire cow any phenomenal records in the production of milk or butter, on the other, she maintains a good average of production, both in quality and quantity. The milk is less rich in butter-fats than that of Channel Island cattle, but shows on an average about thirteen per cent of solids and four to four-and-a-half per cent of butter-fats, and selected cows have far exceeded this. The yield of milk is never phenomenally great in quantity, but an average of 5000 to 7000 pounds per year may be depended upon. While making no claims as a special beef breed, the Ayrshires "kill well," steers at two to three years old weighing 1250 to 1400 pounds. The dressed carcass does not show so large a per cent of weight, compared with the total when alive, as the Shorthorns, Herefords, or Aberdeen-Angus. But the beef, when well-fattened, is finely marbled, palatable and of good flavor. They are good feeders, and an Ayrshire bullock or dry cow will fatten on feed that would scarcely keep a pampered animal of the larger breeds alive. But the distinguishing excellence of the Ayrshire is that it is hardy, largely exempt from disease, and easily kept. It is this which makes it "the farmer's cow" all around the world.

WINTER FEEDING OF COWS AND CALVES.

Feeding in winter is costly because of the expense of harvesting the crops used for the feeding, and the larger consumption of food to sustain the animal heat, so largely spent to overcome the cold of the season. It is often made more costly by neglect to feed liberally at the beginning; the stock quickly running down for want of adequate nutriment, and gaining what has been lost with much difficulty on account of the cold weather. Hence, feeding in the winter requires, for the best results, a generous supply at the start, and a wise selection of food through the season. Moreover, for the sake of profit, the cows should be kept in a productive condition all through the season, and the young stock should be kept growing. By judicious feeding, the yield of the cows can be sustained, and quite as good a quality of butter can be made; and this is a most important point in dairy management. In using this term, it is meant to include every farm where cows are kept, if it is only one for the domestic supply. It is a great loss to feed dry cows on hay and grain, merely to carry them through the winter for the sake of making twenty-five or thirty dollars per head through the summer. This used to be the custom, but circumstances have changed of late, and it is now necessary, in the close competition in all kinds of business, to make every thing count, and to make the farm and stock pay their way every day in the year. At least twenty-five dollars is now required to feed a cow through the winter so that profit can be made in the summer; and, as the winter feeding is the most expensive, cows should be made profitable then as far as may be possible; or, at any rate, a certain number of cows should be in profit through the winter to pay for the feeding of the others, which are depended upon for keeping up the supply through the summer.

It has been proved beyond question that cows can be kept through the winter most cheaply on ensilage; but those farmers who have been wise enough to adopt the silo do not need advice in regard to feeding their stock. "By their works we know them" to be sufficiently informed as to their business in this respect, but the great majority of farmers have not reached this point yet, and need advice and instruction. Cows can be kept fully productive on dry fodder, with a sufficient supply of grain food. Many profitable winter dairies have been kept upon dry feeding, and profit may yet be

made in this way under good management. This good management includes full feeding from the start, to avoid any loss which might be difficult to overcome, and now that the out-door feeding is not sufficient, the winter feeding should be begun at once.

Full daily feed for an average cow should consist of twenty to thirty pounds of cut corn-fodder, or clover hay, with at least four or five pounds of mixed corn and bran ground together; or fifteen pounds of fodder with ten pounds of the mixed feed. An addition of two pounds of cotton-seed meal for milking-cows may be made with benefit. This food may be divided into three rations; a heaped bushel-basketful of mixed feed—made up of corn-fodder or hay, or both, cut and wetted with hot water, and sprinkled over in the feed-box with one-half the grain feed—should be given night and morning, and a feed of dry hay will serve at noon. The slight warmth of the feed thus mixed will be grateful to the cows, and will secure a full yield of milk. With each feed a sufficient quantity of salt should be given; one ounce with each ration will not be too much. At noon, before the cows are fed, they should be watered from a well at the ordinary temperature. A tight barn, with no more than sufficient space for healthful ventilation, will keep the cows warm enough, and the brisk fresh air will be more healthful and invigorating than an atmosphere artificially warmed. To keep the air pure by cleanliness in the stable is more conducive to comfort and health than to make it warm by artificial heat.

Calves and yearlings should be fed precisely as the cows are, the quantity, of course, being regulated according to their size and necessities; but good feeding is indispensable to make good cows.

VEAL CALVES FOR MARKET.

At the present value of milk, that is, what the producers of milk can obtain for it, some other outlet must be found or the milk-business has to continue, as it now has been for some time past, unremunerative as one of our great agricultural industries. On a recent occasion, when the officials of the New York Board of Health made one of the sudden raids on the platform milkmen, and put to an accurate test the milk contained in many cans, the fluid was found to be not only up to all required, but, frequently, it registered above the legal test. This vast improvement is largely due to the favor shown by the milk-consuming public for bottled milk, which commands a higher price than the milk sold in open cans. Sealed cans have also aided in the matter. Now that we are led to suppose that on dairy farms milk is cheaper than water, in that milk is salable and water mixed with milk in undue proportions is not, the question presents itself, how is the present milk surplus to be profitably disposed of? Surely our local farmers are not to be counseled to restrict production; this would be shutting off an active industry, and at once decreasing the possible profits of farming in the vicinity of large cities. The readiest opening is to fatten calves. There never as yet has been an over-supply of good veal on the American market. So early as the first of September well-fatted calves which will weigh from 140 to 170 pounds (these are the extreme weights approved of by dealers) will command eight cents per pound; at the same date, calves which have obtained scanty nourishment at pastures sell at two to two and three-fourths cents per pound; and calves which have received buttermilk as feed will sell at two and seven-eighths to three and three-fourths cents per pound. Those farmers who provide a ration of meal feed calves up to 200 to 270 pounds per head, and secure a good profit in selling at three to five cents per pound, according to quality. The annual slaughter of bob-calves and the downright murder of starving grass-fed calves is one of the things which are past the comprehension of those who are frequenters of the markets of great cities. Let a farmer who keeps fifty dairy cows prepare himself early in the season to keep all of his calves, and when milk contracts are offered to him, let the answer be: "I can this year only sell half of my milk-flow." Then, when the calf-speculator comes, as he is certain to do, the reply to his queries should be: "I have no calves to sell. Later on I will have some choice ones to offer you." Any farmer can obtain as early as the month of July six to six and a half cents per pound for early calves; further on in the season seven to seven and three-fourths cents per pound can be realized; and late calves fed up to veals will sell in November and December at from nine to ten and a half cents per pound.

In mercy to the feelings of dairymen we forbear to give quotations of milk. The subject is not reassuring as it now presents itself. Concerted action and a holding back for other use, rather than a decrease in the production of milk, seems to us to be the better way to solve this question, which is alike of vital interest to producer and to consumer. Any serious falling off would increase prices; but, although such has become a necessity, it does not follow as a wise sequence that a lucrative outlet cannot be found close at hand for the present abundant flow of milk. Should a dairyman find that one-half of his milk-flow is insufficient to bring to early fatness his full crop of calves, then attention must be given to supplement its allowance with other foods. In the first few weeks of calfhood, hay-tea, one part to two parts of milk, is excellent keep. Later on, crushed grain, steamed to a soft mush and added to the hay-water and milk, will produce healthy, salable veal.

Such veal as the London market requires is only to be secured by a rich, full diet of new milk, given warm at intervals of eight hours, with raw eggs as the calf grows, and a small occasional feed of flaxseed cooked to a thin gruel, to serve as an alterative; which is well needed, as calves thus fattened are confined in cribs and kept out of sunlight and separate from all exciting influences.

WINTER BUTTER.

GEORGE E. NEWELL, NEW YORK.

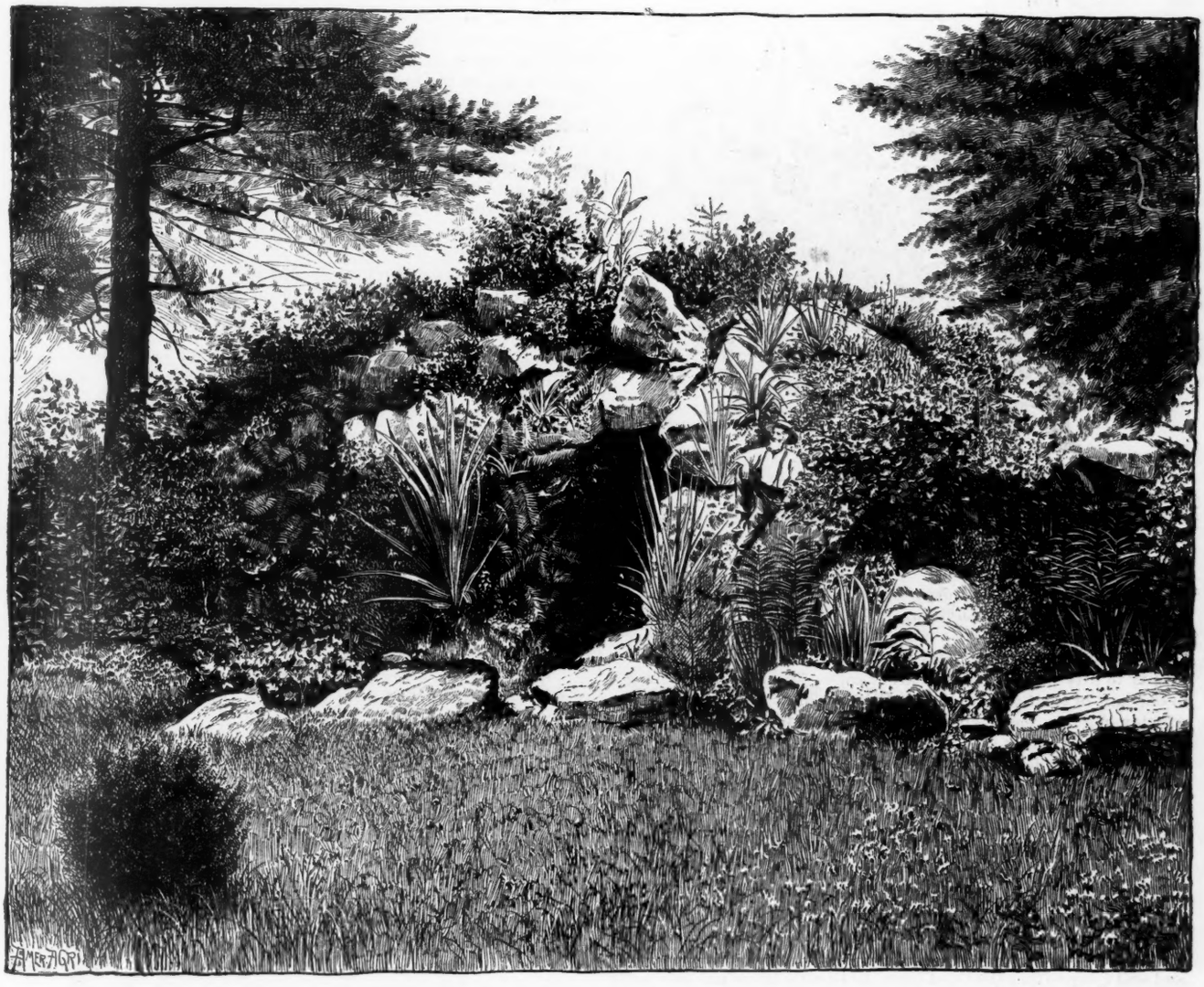
Careful, experienced housewives, who make the finest of butter during the warm season, signally fail to produce a gilt-edged article through the winter. What is the cause of so many failures, and where lies the remedy? The whole matter is, that amateur butter-makers make no allowance for the weather and changing seasons. They have one way of setting milk, of treating cream, and manipulating butter, and they apply that way to the domestic dairy without alteration in June, in September, and in January. This is a grave error, and it must be rectified in every household before fancy or even fairly good butter can be expected. Cream must be separated from milk, and afterward mature, before it is churned. The time given for attaining that maturity should not be less than twenty-four hours, or more than thirty-six. In summer, the normal atmospheric warmth will ripen cream sufficiently within that time, and, without knowing it, many amateurs have their cream just right at churning-time. As the weather becomes cooler, of course the acid develops more slowly, and artificial heat should be supplied to ripen it within a moderate length of time. This is where most of the domestic butter-makers fail. They make not the least allowance for the cold weather, and keep their cream around in a cool atmosphere until it actually becomes bitter instead of sour. To make fine winter butter, skim as in summer, and then mature the cream by artificial warmth. Put the cream-jar in a room heated to a temperature of 75°, and keep it there twenty-four hours. If such a temperature ripens it too quickly, reduce the heat, say to 60° or 65°. Try in every way to make the condition of the milk, cream, and separating butter similar to what its condition would have been in the summer. The science of fine butter-making is not a subtle art that few can comprehend, but it possesses salient points, that all must observe as essential, if they desire to be counted among the successful. Mature cream, churned at the proper temperature (about 60° in summer and 64° in winter), will grain butter hard and firm, and work into a product of the proper consistency and texture. Use no color but such as is known to be reliable, and do not use an excessive quantity of that.

Wire and Picket Fence.—The fence of the future seems to be the wire and picket. Most of the fence machines are made to use five wires, but three wires are used in this section. As now made, the machines use two wires of equal size in each strand, twisting them both alike, but a fence built in this manner is sure to sag, no matter how tightly it may be strained at first, as the pickets will shrink, or the wire wear into the corners enough to throw it out of line. The best way is to use three wires, about the size of telegraph wire, straining these tightly in their place; have the machine made so that the wires pass through the *center* of the hub, using a wire about half the size to twist around this and the picket. A fence well made in this manner will not sag out of line. These fences cost from fifty to seventy-five cents a rod complete. Anything can be utilized for the pickets—small, straight saplings, about an inch in diameter; slats, that can be cut from an old board fence; or pickets sawed on purpose, which cost from $3.50 to $5 per M. These, if pointed on top, and the fence built so they are all on a line on top, and painted with some cheap mineral paint, will look neat, last many years, and can easily be repaired if any pickets get broken. Such a fence is not dangerous to stock. R. G. NEWTON, Michigan.

A PICTURESQUE ROCKERY.

Rock-work, though it seems very simple, is really one of the most critical features to introduce into ornamental grounds. If at all stiff or artificial, it is an encumbrance rather than an ornament. To produce a good effect, a rockery must look as if it had always been there. Our illustration shows a beautiful and artistic piece of rock-work on the grounds of Mr. P. B. Follensbee, Essex Co., Mass. He gives its history and description as follows:

In clearing twenty acres of stony land for mowing lots, and four or five for nursery grounds, I had much blasting of stones done, as well as many rods of heavy old wall to remove. Having no use for the stones, and there being no sale for them, I piled them up as seen in the picture, filling the spaces between with soil and all kinds of rubbish that had to be got out of the way. The view is from the north. The place is sheltered on the north and east by a thick border of evergreens. The plants are all of hardy perennial varieties, requiring no protection or care except thinning out as they become crowded. A large part of them are native wild ones. Among them, at the bottom, are *Osmundas, Aspidiums, Adiantum palmatum, Kalmia latifolia, K. angustifolia, Rosa rugosa, Rhodotypus kerioides*, several varieties of Phlox, Tiger-lily, Golden-rod, grasses, etc. Covering the ground among the taller plants are: *Conium* variegated, white-flowered Mexican Sage, Lily-of-the-Valley, *Primula, Epimedium alpinum, Linnæa borealis*, and Garden pinks. Higher up among the rocks are the smaller ferns, such as Rock-brakes, *Asplenium*, with *Arabis alpina*, early flowering and evergreen, Creeping Phlox, *Dicentra eximia, Campanula rotundifolia, Carpatica, pyramidalis*, etc. In the larger spaces are many kinds of *Spiræa*, such as *S. gracilis, S. Thunbergia, S. Aruncus, S. millefolium*, with other kinds, red, white and buff; white and yellow *Baptisia*, Canada Snakeroot—with Senna wood sage, *Liatris scariosa, Hepatica triloba*, etc. In the floor and sides of the grotto, mosses and the smaller ferns are at home. On the top is a good show of *Cannas, Salvias*, Golden Junipers, Native Asters, *Daturas*, Day-lilies, Shrubby-Johnswort, Geraniums, Abutilons, Fuchsias, Heliotropes, and other bedding-plants. On the south side is a hollow crescent-shaped bed for early spring flowers, bulbs and bedding-plants, with an arched grotto, which makes a good shelter, tool-house, etc. The whole structure is about twenty-five rods in circumference and fifteen feet high, and is growing a little every year.



A HANDSOME FARM ROCK GARDEN.

Rations for Calves in the Winter.—For the best growth of calves in the winter they should be fed and treated as the cows are. As they are as quarrelsome as other animals, they should be tied up each in its place, so that each can get its share of food. An excellent food for calves is made up of cut hay of the best kind, wetted and mixed with—for ten pounds of it—one pound of corn meal and three pounds of bran. This is enough for two calves per day, with as much good clover hay as will be eaten clean. Salt should be added in the same proportion as for the cows.

Dust Baths for Fowls.—In the matter of dust or earth baths, fowls much prefer burrowing in the earth to wallowing in a shallow dust-box. One corner of the poultry-house should be inclosed and then filled with soft, pulverized, dry earth to about twenty inches above the level of the floor. Have a small door connecting this with the poultry-house, and when it is left open the fowls will walk in and take a good wallow. All kinds of poultry especially love to dust themselves when there are indications of stormy weather.

BUSH LIMA BEANS.

There are three distinct types of Lima beans, the most widely known and cultivated of which is the large white Lima. The others are the small white Lima (Sieva) and the potato Lima or Dreer's improved. All of these have until recently been known as climbers only, their vigorous growth making tall poles an indispensable feature in their cultivation. In field culture, poles add considerably to the expense of the crop, while, in gardens, they are anything but an ornament. Henderson's bush Lima—a dwarf variety of the Sieva—was the first intimation of the possibility of a Lima bean becoming dwarfed.

A season's trial has fully sustained its promises, but now comes another surprise. The large white Lima, not to be outdone by its humble relation the Sieva, follows suit and has also assumed bush

FIG. 1. BURPEE'S BUSH LIMA BEAN.

form, as we have had occasion of convincing ourselves by a specimen sent us by W. Atlee Burpee & Co., of Philadelphia. This is a veritable large Lima bush-bean, as seen in Fig. 1, having strong, stiff branches, and forming a compact bush about eighteen inches high. Its foliage is large and firm, and each plant bears from twenty to fifty pods. In Fig. 2 are shown pods and beans reduced to one-half of their natural sizes. Burpee's bush Lima bean, under which name this remarkable novelty will be known, originated six years ago in Chester Co., Pa., where a single dwarfed plant was found in a large field, the entire crop of which had been destroyed by cut-worms. The permanency of this strain appears to have been firmly fixed from its origin, as two of the three seeds which the original plant bore have in the following year developed the bush form of their parent. The succeeding crops have perpetuated this characteristic form in a remarkable degree, thus filling the long-felt desideratum of a first-class large white Lima bean, which can be grown with not more expense than common bush beans. It is a singular coincidence that these two forms of Lima beans should have become dwarfed, or at least known, at about the same time, and still more so that the third form, or Dreer's Lima, has also made its appearance in a dwarfed form, known as Kumerle's Dwarf Lima.

Herbaceous Grafting.—Annuals, or herbaceous plants, belonging to the same genus or natural family, will adhere and grow on each other as readily as do woody plants. Thus, a cauliflower will grow on a cabbage, a tomato on a potato, or *vice versa*. The garden cucumber will grow on the wild vines of the same family which are sometimes used for covering arbors. And these grow to an extraordinary length, while the garden cucumber seldom exceeds six or eight feet. This knowledge of grafting annuals may be utilized and made profitable, especially when the potato is forced to ripen seed by engrafting or inarching on the tomato. Cucumbers may be grown on a high trellis, or around the upper story windows of any building by training one of the wild cucumber vines—either *Sicyos angulatus*, the single-seeded or star cucumber vine, or the *Echinocystes*, or wild balsam apple—either of which grows fifty or sixty feet in a single season up to the desired height. This is easily done by sowing cucumber seed of any of the garden varieties in a flower pot, and when the plant is six or eight inches high joining it to one of these wild vines when it has reached the desired height. Merely scraping the bark of each and tying them firmly together with any soft material is sufficient. They will unite in about ten or twelve days, or sooner, and produce fruits at a height to which the garden cucumber could never attain.

T. BENNETT, New Jersey.

THE CENTENNIAL OF THE DAHLIA.

If England were to celebrate the occurrence of the 100th anniversary of every important event in her wonderful history, her people would be called to an almost daily celebration, or, as we should say in this country, "one continuous Fourth of July." But, instead of warlike events, they take to centennials of an eminently peaceful kind. So this year they have been celebrating the centenarium, or, as they prefer to call it, the "centenary," of the introduction of the Dahlia into England. It certainly could not be to celebrate its introduction into cultivation, as historians tell us that it was grown in Mexican gardens from "time immemorial," and that the ancient gardeners knew it as *Cocoxochiet*. It appears that the celebration of centenaries is to be continued, and the Chrysanthemum is announced as coming next in turn.

When the "Dahlia" is mentioned, it brings to the minds of those who recollect the days of its popularity, when full double ones only were tolerated. They were a great feature at the exhibitions of those days, when they were shown in formal rows, with their stems stuck in holes in a board, so stiff and formal that they could be readily made, by a skillful hand, out of paper, and so like the real flowers as to readily deceive the spectators. Only one thing was difficult to imitate: some of the shades of color had a richness and brilliancy that puzzled the maker of artificial flowers to accurately reproduce.

The Dahlia first bloomed in Europe in the garden of Abbe Cavanilles, at Madrid, in 1790. Cavanilles was a botanist of distinction in his time, and first named and described many plants, which were probably sent to him by his brother priests. He first described the plant and named it in honor of Andrew Dahl, a Swedish botanist, who was a pupil of Linnæus, and a friend and correspondent of the Spanish botanist. This origin of the name should lead to its correct pronunciation, *Dahlya*, and not, as we often hear, "Daly-ah." The English gardeners often call it "Daily." The original species, grown at Madrid, were *Dahlia frustranea*, and *D. superflua*, and by seedlings, as well as hybrids, between these the double varieties were obtained.

The *Dahlia* belongs to the Composite Family of plants, the *Compositæ*, as the botanists term them. In this family double flowers

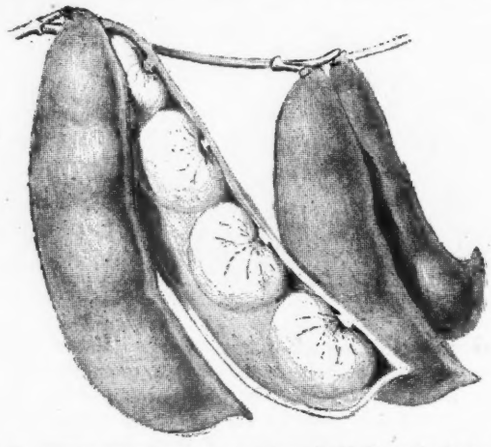


FIG. 2. BUSH LIMA BEAN PODS (*one-half the actual size*).

are produced very differently from what they are in other flowers. In its uncultivated state the Dahlia is single. There are two kinds of florets, the ray or flattened florets, while the center or disk consists of tubular flowers, the two kinds being unlike in color. In the production of a double rose or Camellia we find, if we examine a flower of the single or normal form, that we have the calyx. Just within this are five petals, within these petals, which together form the corolla, and in the center of all the stigmas, terminating the styles, which are attached to ovaries, hidden down in the green

cups (in the rose) formed by the calyx. In most gardens it is not difficult to find a partly double rose; by picking one of these flowers apart, we find some stamens partly converted into a stamen completely changed to a petal, save, perhaps, a bit of anther remaining to show what this petal started from. It is a very interesting study to trace the origin of double flowers. In some cases no transformation from one part into another appears to have occurred, but two or more petals, etc., have been found where was originally but one. In composite flowers the change is of the tubular or disk flowers into the ligulate or strap-shaped or ray flowers. It is seldom that a native or wild flower is seen to become double by the methods we have mentioned, or by any others known to florists; but, in order to produce this unnatural state of development, we have to over-feed, or otherwise stimulate it. In some cases, conditions that have affected a grandparent, as in animals, have manifested their results in the grandchild. The Dahlia first flowered in Europe in the Royal Gardens of Madrid, in 1789, where it was sent from the Botanic Gardens of Mexico. It was sent to England the same year by the Marchioness of Bute, who sent seeds. A single plant was raised from those seeds, which soon perished. From 1803 to 1814 the plant was introduced by several persons into both England and France. The original plants at Madrid do not appear to have produced many varieties, though they were from plants already cultivated in Mexico. Humboldt found in 1804 the native plant growing in sandy mountain meadows, at 5000 feet above the level of the sea. He sent fresh seed, gathered from these plants, to the gardens of Berlin and Paris, and numerous varieties were subsequently derived from this stock. The best double flower was produced in Berlin in 1809. The most beautiful of all Dahlias is *D. imperialis*, which was introduced into England in 1867 and 1868, and about the same time came to this country. It was found here, as well as in Europe, that, were it treated like the old kinds, the season was not long enough to bloom it, in the open air. The plant has very beautiful and finely-cut foliage. Its large, single, white flowers are pendulous, and remind one somewhat of an enormous water-lily of peerless white. In England they get seed in abundance by growing it in a sheltered place in the open air until there is danger of frost. The most advanced flower-stems are cut and placed in bottles of water, and exposed in a sunny greenhouse until the seeds are perfected and ripened. A new species, *Dahlia gracilis*, was discovered by M. Rœzel, in 1873. It has since then been in the hands of that prince of hybridizers, M. Lemoine, of Nancy,

DAHLIAS, OLD AND NEW TYPES.

France. The plant naturally has foliage very finely cut, like that of *Cosmos bi-pinnatus*. Some wonderful results are said to be in store for dahlia-lovers.

It is gratifying to notice the change in popular taste regarding the Dahlia. It was the writer's fortune to be in London the summer that the single Dahlia was shown in any quantity, and they were to be seen at the nurseries, as well as at the show, and we were glad to see the popularity with which they were greeted. Perfume or Bouquet Dahlias are not, by any means, novelties. They are useful in flower decoration. *Cactus Dahlia* is the name of a new class. They are very double, but the flatness of the florets give the blooms something of the appearance of a cactus flower. They are effective in decorations.

The upper central flowers in our engraving represent the Cactus Dahlia *Juarezii;* the single flower in the lower center is the original form, and to the right are striped or variegated varieties of the same. In the lower left-hand corner are seen the modern double forms, the miniature pompone, and the large-flowered show type.

Ixias and Sparaxis.—A pot of these is a pleasing feature in the bulb line, and quite a departure, as these plants are not much grown. In growth, they remind one of gladiolus, as do the bulbs themselves, with the exception that they are smaller. There are various colors and shades, and the fully-developed spikes are very handsome and graceful. The only extra attention they need is much water when in bloom. The Freesia is another flower which has become popular, and grows more so as its merits are known.

Christmas.

DORA HARVEY VROOMAN.

Christmas is coming! Does any one grow weary of it? When the returns begin to be numbered by scores, and child-joys have blossomed into maturer happiness and then faded away into tender memories, the coming of Christmas, though it be but "once a year," brings something of sadness. But we must not harbor gloomy thoughts, for all about us are the eager, happy children. They look forward to this day, their little hearts warmed with expectation and glee, for they have not learned the sober realities of life. In their joy we may, if we will, renew the happiness of childhood. Christmas is essentially the children's festival, for does it not commemorate the birth of a babe?—the Babe of Bethlehem? Let good cheer prevail. Let no ill-temper or envy be manifested at the season which brings round the anniversary of the greatest and noblest sacrifice ever made. Let all be merry and glad!

A farmer's daughter, I spent my happy childhood on the dear old farm. Hence, I sympathize with all the lads and lasses who dwell away from the hum and noise of the great cities. Christmas is a time for which you have long been waiting. Many of you have the work of months stored away in your bureau drawers awaiting the Yule-tide to bring your treasures forth. There will be all sorts of pretty bonbons and trinkets, made by your own nimble fingers with love and care. To me, these home-made gifts are the dearest. Any one who has the money can go to a store and buy a present, but we know that the one who devotes time and patience to make us a little souvenir must love us, and the assurance that we are the possessor of such a gift (the most priceless in the world) ought to make us happy.

A novel and pretty way of distributing Christmas gifts is to set your dining-table as you would for a meal. Put on your choicest cloth, and at each one's accustomed place set a soup-dish. The center of the table may have some pretty decorations arranged to suit the fancy; a pot of tall ferns would be lovely. Festoons of evergreens and holly may hang from the chandelier or lamps, as the case may be. All the small gifts can be put into the dishes, while others may be neatly arranged in front. Such gifts as sleds, rocking-horses, etc., should be placed where the chair usually stands. Let some one have special charge of the arrangements. When all is ready, the bell may be rung, as at dinner time, and the household called together. In this way the older folks may share the surprises and pleasures with the younger.

Let me whisper a word or two more to my young readers before I lay down my pen. Perhaps you are happy; perhaps you have all that you can wish to make your cup of joy run over; but stop and think a moment. Do not you know some one who may be less fortunate; whose Christmas will be empty and dreary, unless some one else (which may be *you*) brightens it? Remember even in your gladness that "it is more blessed to give than to receive." The giving of one little token to some poor little child will bring you much additional joy. Try it.

Corn Decorations.

HARRIET P. RICHARDSON.

The ingenious girls who live on farms might adopt some of the pretty decorations from the famous Sioux City Corn Palace, and adapt them to their own rooms. One of the prettiest is trimming mantels with ears of blue, white and red corn, fastened together in clusters, or alternate rows. The ears are split, and the flat surface nailed on the woodwork. The design can be made as simple or as elaborate as individual fancy suggests. The corn can be covered with shellac, and should any kernels have fallen where it disfigures the design they can readily be fastened in with a little glue.

Another pretty decoration is a curtain made of kernels of corn strung on stout linen thread, using the different colors and making long chains before joining them. They can be made as handsome as the Japanese curtains, and are far newer, and not at all difficult to make. Any one who has ever seen or made a melon-seed bag will easily understand how to work on corn curtains, and will be sure of having something very pretty and unlike other people's curtains. I once saw a lovely hat made by a Southern girl, from corn-husks. The hat was braided husks, and was trimmed with delicate flowers and foliage also made from husks. It was a beautiful piece of work, and I really envied the fair possessor her skill and her ingenuity.

The Raising.

WASHINGTON GLADDEN.

The farm-life of forty years ago was often monotonous and lonesome, but it had its frolics and its outings, into which the farmers and their boys managed to pack considerable wholesome fun. The work itself supplied some opportunities of merry-making. There was not much amusement in holding the plow, or in following the harrow, or in hoeing corn, or in "sprouting," or picking up stones; but the sheep-washing and the sheep-shearing in the spring-time were sometimes considered in the light of a diversion; haying-time was a time of jollity, in spite of the hard work, and the corn-huskings and apple-bees were frequently social events of some importance. Aside from these homely festivals of labor, there were occasional holidays—a day for berrying, generally, in some pause of harvest; a nutting excursion in the autumn; and now and then a hunting or fishing holiday. Fourth of July and "General Training" were high days in the farmer's calendar; the circus also tempted him to town once or twice a year, unless his principles were very firm; and the traveling menagerie, wholly uncontaminated by the wicked clown and the enticing acrobat, offered him an occasional glimpse of zoölogical wonders. And when we think of spelling-schools, and singing-schools, and sleigh-rides in the winter, we are constrained to admit that the farmer's life was not, in the olden time, altogether dull and joyless.

One of the occasional festivities that I recall with pleasure was the "raising." Barns, in those days, were rather formidable structures. The frames were always of hewn timber; sills, beams, posts and girders were cut in the woods, hauled to the site of the barn, and there carefully scored and hewn with the broad-axe to the proper dimensions; mortises and tenons were cut, braces were framed, and all parts of the skeleton were made ready. Then the neighbors were bidden to come and help in the raising of the frame. They all came. That was a ceremony which was seldom neglected. At the time of my earliest recollections the whisky-jug was considered a nearly indispensable accompaniment of the raising; it was a question whether any considerable building could be erected without its inspiration. I remember well that the first raising which I ever attended witnessed an innovation upon this well-established custom. The builder of the barn was not a whisky-drinker, and he proposed to furnish none to his neighbors. They were constrained to refresh themselves with a milder beverage,—water sweetened and spiced with ginger and nutmeg,—and a luncheon of doughnuts and gingerbread handed round in a basket. The sly scoffs with which this temperate refection was received are well remembered by the boy who carried the basket. But he was not at all ashamed of the small part that he was permitted to take in breaking down a foolish and brutalizing custom.

The average barn of the neighborhood where I lived was constructed with four "bents." I cannot find that word "bent" in any of my dictionaries, but it was the word used by the local carpenters. Each bent consisted of two posts, surmounted by a heavy beam or girder, framed to the posts, with braces in the angles. The raising of these to their places was the work that required the united strength of several men. After the heavy sills had been carried and placed upon the foundation piers, the timbers of the bents were laid upon the ground and pinned together, the tenon of the foot of each post resting near the mortise in the sill. Then came the tug of war. Two men with handspikes stood near the foot of each post to guide the tenon into the socket; as many stout men as could get hold ranged themselves behind the top beam, and stood ready; the boss-carpenter, with his level in his hand, took his place over against them, and gave the word, "Heave, oh, *heave!*" was his cry, with a strong accent on the last "heave," which he emphasized also with his level, beating time with it, like the drum-major with his staff, or the conductor with his baton. The heavy timber came up at the first call to the height of the knees; at the second, to the level of the breast; at the third, it was lifted above the heads of the stalwart rank; and then three or four long pikes were thrust against it from behind, and the strength of the lifters was transferred to these. "Heave, oh, *heave!*" shouted the carpenter, and little by little the heavy frame went up, until the posts were erect, the tenons at their bases settled firmly into the sockets prepared for them on the sills, the carpenter's level determined them to be perpendicular, and diagonal braces nailed from the sill to each post held them firmly in their places. Then each "bent" was reared, and the heavy "plates," or side-beams, upon which the rafters rest, were lifted and laid upon the top of the bents, binding them all together. This was the most difficult and perilous part of the undertaking. When it was accomplished, the company greeted the sturdy structure with a cheer, and departed to their homes.

Such a "raising" was a social event of no small importance; the neighbors enjoyed coming together; the boys were on hand to boss the job; the joker of the vicinage was there, and his rough wit caused great hilarity; the critical judgment of all the wise men was freely exercised upon the site, and the building, and the builder; there was just danger enough to afford a little excitement, and the sense of good-will and neighborly coöperation kept them all good-natured.

It is a simple and unromantic idyl, this story of the raising; yet there may be here and there an old farm-boy, in city or town, who will not be sorry to recall it.

Keep an Account-Book.

One of the most important lessons to teach young persons of both sexes is the value of keeping accounts. No one who keeps a strict account of his income and expenditures will be likely to let the latter exceed the former. The account-book becomes a sort of Mentor if one is spending more than he ought, unpleasantly forcing upon one's attention the fact that he is not quite honest, for it really is dishonest to buy what you have not the money to pay for. In short, the account-book is just what makes the difference between the happiness of living within your income, or the misery of going beyond it. One would place little dependence upon a merchant who transacted his business without keeping a set of books. If you are the possessor of an income of ten dollars a week it is just as important to you to know how that money is being spent, and to be able to tell at a glance whether or not you are getting the greatest possible amount of good for it, as it is for the merchant to know how his greater capital is invested, and what returns it is making.

To the housewife the keeping of accounts is of the utmost importance. We once knew a lady who was suddenly brought down from two hundred dollars a month for her housekeeping to one-sixth of that sum. "But for my habit of keeping a strict account of each item of household expenditure," said she, "I should never have known where and how to retrench." You will look longer at a sum of money before you part with it, whether it be ten cents for candy that you are better without, or ten dollars for a dress or some other article that you do not strictly need, if you feel that your first act upon returning home will be to enter your purchase in your account-book. The rock on which many husbands and wives split is the inability of the wife to keep within the amount her husband is able to allow her.

It is difficult to foster this habit in a child unless he has something of which to keep account. Therefore, at a very early age he should be entrusted with a certain sum per week, or month, for pocket money, and be guided not only in the disposition of it to some extent, but in business habits by being encouraged to put down in a little note-book his childish purchases. If he can earn this stipend, so much the better. Give him a sitting hen for his own; approximate the cost of her food and that of her chicks; let him debit himself with this, and credit himself with the proceeds arising from the sale of the chickens or eggs, and you will be inculcating business principles that will be of far more

value to him than the money he will make, either now or by and by on a larger scale.

It is not sufficient to know how to make money; one must also know how to use it and how to take care of it. So we say, keep an account-book, and begin on New Year's Day.

Winter Hats and Cloaks.

The cold days are upon us, and it is full time to consider outside wrappings for the winter, while a change in the style of head-gear is imperative, although a black lace bonnet, even if it has seen a summer's use, may serve as an evening hat all winter, if it be faced with velvet, and have a narrow black velvet bridle to fasten beneath the chin. The tendency is decidedly toward low hats, and the felt turbans and toques have extremely shallow crowns, sometimes decreasing almost to a nothing at the back. The English walking-hats, also, are much lower, and many have the brim turned up behind as well as on the sides. Very large round hats are cut off close at the back, but show wide, projecting brims in front, which are waved, curved, or else pinched in one or two places.

Bonnets are either small or of medium size. The crowns are long, and the brim may be straight, irregularly indented, or else rolled back in coronet shape, as is most becoming. The sides are generally short and round, so that it is necessary to place the strings behind at the end of the crown. Smooth felt and velvet are the materials most used. One of the novelties is a style of bonnet crocheted of silk cord; these come in all the popular colors. There is less matching of hats to costumes than usual, a black hat being good form with all dresses, while even the colored ones are harmonized by black trimmings. Large, picturesque hats of black velvet, with many gracefully-drooping plumes, will be the favorites for afternoon and Sunday wear, while smaller toques are more suitable for the morning.

Ribbons, velvets, embroidery and fancy feathers are the garnitures most used, but flowers and artificial fruit, as peaches, grapes, cherries and plums, are by no means out of fashion. The flowers are usually of silk or velvet, which admit of most delicate shading. When bonnets are made by covering a frame, the material is laid over the crown in soft, full folds, running lengthwise, and velvet, cut on the bias, forms a fluted edge, extending far underneath at the back. Embroidery on cloth or velvet is much used for crowns, and jet, ever popular, again appears in bandeaux, pendants, buckles and ornaments.

The use of fancy feathers and birds is enough to make a member of the Audubon society shiver, but they are very beautiful, while the blackbirds, so much in vogue during the summer, are considered as smart as ever. White, gray and black wings are arranged on the sides of turbans to point either front or back, as best suits the shape of the hat. An Indian trimming of brown and black feathers is known as the "Buffalo Bill bandeau," while the "Edison green" is a fashionable electric shade displayed in all varieties of small feathers and ostrich tips. Extremely long aigrettes, curled at the end, are a new feature this season, and smaller ones come in all the new colors.

Felt sailor-hats are trimmed with a band of black velvet and folds of white or colored crape, while a large crape rosette is placed on the left of the crown. Some of the soft felt toques are stylishly trimmed with black lace gathered in front and folded like a scarf along the crown. Black lace on red felt is particularly effective. Small bonnets and toques are also made of the same cloth as the walking-suit, embroidered and trimmed with black. Tiny girls will wear a flat Chinese hat, the low, bowl-shaped crown of which is surrounded by feather rosettes, graduating smaller toward the back, where they meet beneath a small ribbon bow, while under the brim is placed a ruche or wreath.

Long, heavy cloaks for winter are generally combined of two materials, as plush or velvet with cloth, and a most effective trimming is the new cut-work, done in large leaf or flower patterns. The foundation is cloth, and it is done in the same fashion as the linen work described in the September number of the AMERICAN AGRICULTURIST, under the name of "Richelieu Embroidery." The edges are corded or embroidered with coarse silk, and plush or cloth of a contrasting shade is placed beneath to show in the open spaces. This trimming may be made at home or purchased by the strip. Heavy passementerie fringe will also be largely used on cloaks, as well as dresses, and fur and Astrakhan, as ever, will trim many outdoor garments. Elderly ladies wear half-long mantles of black plush or velvet, trimmed with embroidery in a braiding design, and edged with fringe. The Directoire capes of light cloth, worn through the fall, will give place to short wraps of sealskin plush, changeable velvet, or fur. These scarcely reach the waist-line at the back, but the fronts extend to the foot of the dress, and are folded in three or four large pleats. They are entirely without trimming, but to many are added a high, wired collar to stand up in the neck, and a small hood. Young ladies always prefer tight-fitting jackets, and those of cloth are now almost covered with soutache braiding in palm and arabesque patterns. A feature of the new styles is to cut them very square. Thus the collar has square corners, the sleeves have square cuffs, and the edge of the jacket is cut straight around the hips. Very dressy cloth jackets have full velvet sleeves much wrinkled around the arm.

RAISING THE BARN. (*See Page* 638.)

Toboggan Caps.

You can make half a dozen in a single evening, if you have a sewing-machine, or even without, if your fingers are nimble. The material may be jersey-cloth or flannel, or you may piece them out of an old jersey, or use a remnant of cloth with any elasticity or "give" to it. For the length measure the distance around the head it is intended to fit, from the top of the brow over the ears to the nape of the neck, and double this for the width, from the nape of the neck over the crown of the head to the center of the forehead, allowing three inches for the necessary fullness. Hem one side of the

length; then with a big needle and a strong thread gather the two short sides and the unhemmed length into a close rosette and fasten the thread securely. Add a bow of ribbon, or three worsted balls, to hide the gathers. To make the balls, wind double zephyr one hundred times around a piece of card-board three inches wide; slip it off, and tie all the strands tightly in the center; clip the outer edges, and the ball will spring into shape. Trim close.

How to Beautify a Sitting-Room.

LILLIAN MAYNE.

Our sitting-room was charming; that is, it had been charming, and would have been so at the time of which I write if it had not been shabby. In our palmy days the room had been built with the idea of catching all the sunbeams possible. It was in an L on the south side of the house, with two long windows at each end opening on verandas, and a large bay-window on the south side. The room was large; about twenty-five by twenty feet. Opposite the bay-window there was a beautiful mantel of carved oak, below which was a grate, which in summer was covered sometimes with a Japanese fan and at other times filled with grasses and cat-tails, and in winter was heaped with flaming coals. When the room was completed we selected a bright carpet, a few choice engravings, a pretty fire-screen, a comfortable lounge, a sofa, several odd easy-chairs, and a large center-table with a pretty cover, on which were piled our magazines and newspapers. A well-filled book-case, a piano, a guitar, and a choice collection of plants completed the furnishing of our room.

But "Fortune is a fickle jade." Years passed, and affliction and reverses came. Our family became reduced to four in number—mother and her three daughters. There was talk of giving up our comfortable house, but we feared that the lack of sunshine might shorten Mother's life. We three girls became bread-winners, but our earnings were not great, and by the time our weekly bills were paid the family purse was nearly empty. It was with heavy hearts that we saw our pretty room grow shabby, when a few dollars occasionally, spent with judgment, might have kept it in something like repair. We decided to lay aside a small sum each week to be devoted to refurnishing the room, which, although we had gloried in its sunlight, we now actually thought of darkening in order to hide its shabbiness.

The need of a new carpet was imperative. We did not like painted floors, although they were fashionable. Mother, who was an invalid, must not be annoyed by the sound of footsteps on the bare floor, and we girls, who spent our days in carpetless offices and school-room, and looked forward to our home in the evening as a haven of quiet and rest, could not endure the thought of a bare floor. To buy a carpet for this large room seemed a hopeless task; however, we began to save toward it, and, after months of self-denial, we put our savings together and found the amount to be a few cents more than fifty dollars. How could we carpet that immense room and buy many other things to correspond? We gave up the problem in despair. With winter coming on, coal-bills to pay, taxes and insurance to meet, our winter wardrobes to replenish (our business required us to be well-dressed), it was impossible for us to appropriate another dollar for house-furnishing.

Suddenly a bright idea struck Bess, our eldest. "Girls," said she, "I have a plan. The carpet is worn more on the front part of the room than on the back. Why not turn it around and bring the worn part next the back windows? The center will still be in the center, but it is so worn that it must be covered in some way that will suggest itself, I hope."

"That sounds well," said Mary, "but you have not considered that the cut in the carpet around the chimney will then come in the most conspicuous part of the room—just before and in the full light of the bay-window."

The truth of this statement dampened our rising enthusiasm, when Mother from her sofa suggested a way out of the difficulty. "Take the carpet from the bay-window, match the figures, and piece the breadths; then put a piece of neat, pretty oil-cloth under the plants. We always put oil-cloth over the carpet when the plants are there; why not have oil-cloth without a carpet under it?"

We took the nails out of the carpet that night, and the next day found a man who turned it around for us. We believed it poor economy to use our own strength for the purpose. That night we matched and patched with much more labor than is required to describe it; indeed, had not Mother come to the rescue and sent us good suggestions from her lounge, I fear we should have abandoned the work.

The next day our man came again, tacked the carpet down, and cut and fitted it neatly around the chimney. We were much pleased with the fresh appearance of the front part of the room and at the doors and around the chimney, but the center and back part of the room still looked shabby.

"An art square would be the very thing," said Bess, "and an art square we must have."

We found one having an olive effect, just what we needed to tone down the bright carpet. We needed four by three and a half yards at a dollar per square yard—an item of fourteen dollars. Then we saw some double-faced canton-flannel in pretty figures having the appearance of velvet, which Mary said we must have for our windows. "They look so warm, they will really be a saving in coal," said the wily girl; so we spent nine dollars for our curtains; we already had poles. Then we bought enough olive felt for piano and table covers. As these things came home and were assigned their respective places, our delight can be imagined.

Then we discovered that our furniture, chairs, tables, and lounges needed attention. Some of the wood we painted, some we stained, and others we varnished, after washing it with turpentine. We bought cretonne and jute cloth and upholstered the sofa, easy chairs, and Mother's lounge. As we preferred odd coverings to those of uniform pattern, we were able to use remnants which were sold for much less than the regular price. We bought ten cents' worth of asphaltum and blackened the arch around the grate, also the fender; and we matched the paint on the doors and "touched them up." At a cheap store we bought a very light clothes-frame of three panels, on one side of which we pasted furniture calico of a pretty pattern; the other side we covered with wall paper; this we used as a screen for Mother's lounge, and it also served to attract attention from the carpet upon which it stood.

This was the work of our autumn evenings, and by the time winter set in our work was completed, and we had enough left of our fifty dollars to buy a little present for Mother.

Making Christmas Decorations.

Where there is a family of young people to engage in this charming occupation, it is quite the event of the year. Choose a space in the hall or over the folding doors—wherever it will be the most prominent—for your motto of "A Merry Christmas." If the letters are white, have a background of green. Draw the letters to form the words on pieces of stiff card-board. Old pasteboard boxes may be so utilized. Brush over the letters with liquid glue and sprinkle them thickly with rice. If these letters are then sewed or tacked on a large sheet of card-board, and all the space not occupied by the letters filled in with twigs of evergreens sewed on, you will have a very effective device. If you wish the letters to be green, cut them out of stout brown paper and sew twigs and leaves on them with heavy, dark thread. If some of the Christmas greens are frosted, the room will light up beautifully. This is done by brushing the leaves with thin gum, and sprinkling them with ground mica. It has such a frosty appearance as almost to lower the temperature of the room.

It takes some practice to make the festoons of evergreens that are so graceful, looped and twined about picture and bracket. Have ready strong hempen cord, fine twine, and quantities of the green twigs you are going to use. Make a loop in the coarse twine, and fasten it over a hook, to hold it firmly. On this tie the sprigs in bunches of three or four, winding the fine twine about each bunch several times, to keep it firm. These festoons are handsomer if brightened up with an occasional spray of holly berries, bittersweet, or red-haw sprigs. If you wish to make round wreaths, use wire instead of the heavy twine. Dried grasses dipped in a solution of alum, which makes them sparkle like crystal, make charming decorations. Letters, formed of these grasses, sewed on a fountation of pasteboard, look like bits of icicles.

It is better for the busy housewife to have the Christmas decoration confined to one room, such as the parlor or sitting-room; for, although they are beautiful, like all things else, they are subject to decay, and, during the process, require a pretty constant supervision with broom and dust-pan.

Pretty Trifles for Christmas Gifts.

MARTHA CLARK RANKIN.

A Novel Work-bag is made of the crown of a straw hat, which may be dyed and varnished, painted, or left in its natural state. Line the inside of the crown with silk of a harmonizing shade, continuing the silk beyond the straw sufficiently to form the bag. Finish with a hem wide enough to admit double runners of narrow ribbon with which to draw up the mouth of the bag. Feather- or thorn-stitching, or other decoration, may be used on the silk, and an embroidered star is pretty on the crown.

Wooden-Spoon Cushion.—Hanging pincushions are exceedingly convenient, and wooden spoons are now used for this purpose. Paint or gild the spoon, and fill the bowl with a pincushion securely glued. Decorate the handle near the top with a pretty ribbon bow with ends from which to suspend the spoon.

Baby's Rattle.—Select a round stick (bamboo is the best) eight inches long and half an inch in diameter. At one end fasten half-inch-wide ribbons of contrasting colors, two of each. Weave in and out, drawing tightly over the stick till its whole length is covered with pretty checker-work. Have ends and loops of varying lengths at the top, with a little bell at the end of each.

Indelible Ink Doylies.—Economical and very pretty doylies may be made by buying the linen, cutting it the desired size, fringing the edges, and etching little pictures or appropriate quotations with indelible ink. When doylies are bought already fringed, there is often a pretty pattern which may be effectively emphasized by going over it with etching silk in Kensington stitch, or with pen and indelible ink.

A Sponge-bag is indispensable when traveling, and may be very pretty when made of butcher's linen, embroidered in raw silk or linen floss, and gathered on draw-strings of white braid. It should be lined with rubber sheeting or oiled silk.

A Braided Rope-basket is easily made, and, filled with bonbons or flowers, is a pretty gift for a friend. Use quite small rope, wind it around and around until a circle is formed of the right size for the bottom of the basket. Sew it firmly together. Take three strands of three or four ropes each, and make a plain braid which shall form the sides of the basket, and must be securely sewed to the bottom. For the handle, make a braid of three single ropes. Conceal the joining by a graceful little knot of rope with fringed ends, fastened on the side.

Shoe-button Case.—This is a contrivance designed to make the sewing on of a shoe-button, at a minute's notice, an easy matter. Tack together, at the edges, two ribbons of equal width in prettily contrasting shades. They should be a little less than half a yard long. Gild a spool of black linen thread and fasten it at the middle of the ribbon, with two or three leaves of flannel for a needle-book. Form each end into a little bag for the buttons. These bags should be two or three inches deep and should be drawn up with narrow ribbons from which the whole may be suspended. Etch the words "Shoe-buttons" in fancy letters on the front.

Dorcas Girdle or Epaulette.—A variety of narrow gay ribbons of unequal lengths having, variously, at their ends, scissors, thimble, bodkin, needle-case, pinholder, thread, etc., and all fastened by a rosette to the belt or shoulder, makes what is called a "Dorcas" girdle or epaulette.

Hearth-brush.—A decorative hearth-brush to be hung by the fireplace is made by braiding ropes for a handle, leaving the ends nearly half a yard long. These ends should be raveled, and the handle should be adorned with a handsome bow of ribbon.

Baby's Shoes.—A baby's first shoes are always so dainty and cunning that mothers do not like to throw them away, even though they have no idea what to do with them. For the benefit of all mothers let me say that these little shoes make the "sweetest" pincushions imaginable. Button them and stuff with bits of flannel. Make a cushion which shall just fit the top of the ankle. Use both shoes, having the cushions of contrasting colors, like old rose and primrose yellow. Tie them to-

gether with tasteful bows of ribbon of both shades, and use one cushion for white pins, the other for black. If the toes have been kicked through they will look only the more babyish and pretty, and you will have an ornament for your dressing-case which will appeal to every mother's heart.

Plaid Pocket or Traveling-Bag.

The pocket or bag, which our illustrations show both closed and open, is made of strong gray linen. Cut for it a piece of material twenty-two inches

FIG. 1. TRAVELING-BAG CLOSED.

wide and thirty-three inches long. Round off the corners of one end for a lapel five and a half inches deep, observing the illustration; fold the other end upward twelve and one-half inches deep, and mark the line. Then delineate the embroidery design, and work the same with fast-colored silks, or embroidery yarns. When this is finished, baste a lining of oil-silk on the inside, and make the pocket in the following manner: Cut a piece of the linen twenty-eight inches long and twelve inches wide, tack its bottom edge middle to middle on the bag; baste its side edges to those of the main piece, and sharply crease a fold in the pocket piece on each side half an inch from the outside edge. These folds form the flaps. Then sew, for the umbrella-holder, a strip of linen six inches wide, after first hemming its cross-edges sufficiently deep to allow a silk cord to be run through, two and one-half inches below the upper edge of the pocket, reaching from one upper crease of the flap to the other, as seen in our illustration, Fig. 2; turn the strip up and bind its upper edge together with that of the pocket, with a piece of the same braid used for binding the bag. Bind the bag all around with silk or worsted braid in color corresponding with the embroidery. Run two seams, one inch apart, across the bag, immediately above the lapel, through which a polished stick is to be pushed, as seen in the engravings. On each side of these seams make two strong silk loops, through which pull, and fasten with pretty knots, fine hemp cord for a handle.

FIG. 2. TRAVELING-BAG OPEN.

A Pretty Toilet-Box.

To make this box, cut of heavy pasteboard, for top and bottom, two triangular pieces, one side nine inches long, and the two others seven and one-half inches each. Also cut for the sides three pieces two and one-half inches wide, and matching in length the back and sides of the top and bottom.

TOILET-BOX.

Cover the insides with a layer of thin sheet wadding, over which baste salmon-colored satin plain, as lining. The front corner of the top-piece is covered with a puff of salmon-colored satin, as seen in our illustration—also over a thin layer of wadding. The rest of it is covered with steel-blue plush, which has been decorated with embroidery in salmon-colored silk and fine gold cord. After the bottom-piece and the back are covered smoothly on the outside with steel-blue sateen, join the sides on the outsides with fine overhand stitches, and sew them to the bottom.

Now fasten the lid to the box with two double strips of the satin, about half an inch wide; cover the two sides with a puff of the satin, about four inches wide, the upper edge of which is finely gathered in two rows, leaving a heading half an inch wide. A small loop of satin on the front serves for lifting the lid, which is finished all around with a heavy salmon-colored silk cord, as seen in the illustration. The lining is finely hemmed against the turned-down edges of the outside.

Overcoat for a Boy Five Years Old.

To make this coat, the front and back of which is shown in Fig. 1, cut of cloth, and sateen as lining, two pieces for each of the patterns given at A, B, C, D, E, and F, in Fig. 2. After folding the mate-

FIG. 1. BOY'S COAT.

rial, double through the middle one piece each of G and H. Interline the fronts all the length down four and one-half inches wide with canvas; collar and cuffs entirely. Then cut into the left front the

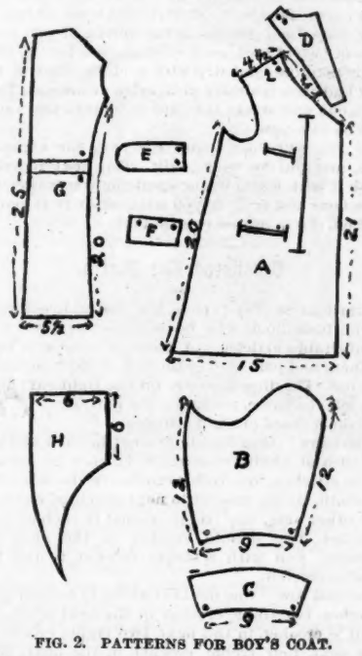


FIG. 2. PATTERNS FOR BOY'S COAT.

slits for the upper and lower pockets, and into the right one only the lower; sew in the pockets, and stitch the lapels from dot to dot over them, as seen at A, in Fig. 2. Across the waist-line, on the inside of the back, sew a shirr, as indicated at G; lead an elastic of the desired length through it, and, in joining the back to the fronts, sew in the belt-pieces, as indicated by the dots in patterns E and G. Make the button-holes in the left front, and sew buttons on both fronts, about three and one-half inches from the edges; the straight vertical line in A denotes their place. Join the collar to the coat; sew the sleeves together; put on the cuffs, and stitch the sleeves into the armholes so that the seam of the sleeve comes a little more than half an inch above the under-arm seam of the back. The breast-flap, lined and finished with buttons and button-holes, is to be basted into the coat if the same is to be worn high at the throat. The numbers on the lines of the diagrams give the number of inches that each part has to be cut. In cutting the coat, allow for the seams.

An Embroidered Table Cover.

The cover of fine white Aida canvas is decorated with embroidery in long stitch, and is bordered with points of old gold-colored plush. For these

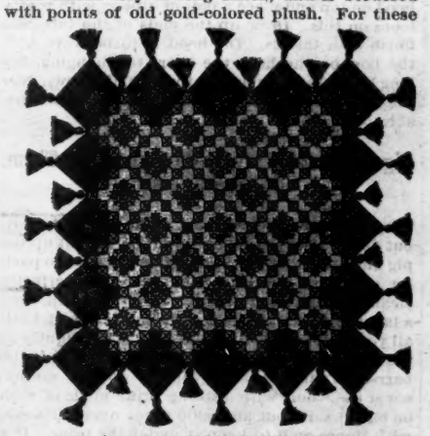


FIG. 1. LONG-STITCH EMBROIDERY.

points cut, of a sufficient length, strips of the plush four and three-quarters of an inch wide, and line these with crinoline. Then measure one and one-half inches from the top edge, a line all across the plush, and from this mark out the points so that at their widest part along the line they will measure three and seven-eighth inches, while at their lowest end they are but three-quarters of an inch wide; now mark with a dot the place three-quarters of an inch below the line between the deepest parts of the points, and cut a slit from the lower edge of the plush up to this dot, fold the sides under, and fasten them on the back. This will give the points as they are represented in Fig. 1. A safer way would be to cut a paper pattern according to the given measurement, and, when it is satisfactory, cut the plush after that. The edges of the canvas have to be cut exactly alike, as may be seen in Fig. 1; sew these with

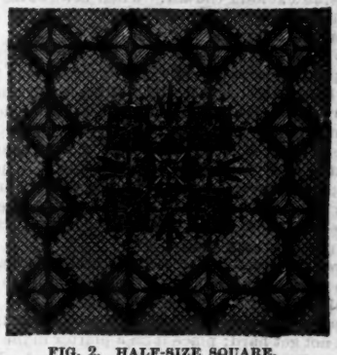


FIG. 2. HALF-SIZE SQUARE.

very close, fine stitches on the plush, and embroider the canvas after the design given in Fig. 2, which represents one of the squares in about half its original size, with filoselle silk in several shades of blue, terra cotta and old gold, finishing it with stitches of gold thread across and between the little figures. Sew on and between all points, tassels of brown worsted mixed richly with old-gold-colored silk and gold threads, and line the cover with sateen or silk.

A Puritan Hood.

EVA M. NILES.

Among the many pretty ways of making hoods, none is more effective than that known as the Puritan. A person who can knit simple garter stitch may make one of these without difficulty, or

it may be crocheted in the same shape. For the material, get a pair of large-size wooden needles, two skeins of Starlight Shetland floss, of any shade desired. I like black best; it has the effect of Spanish lace. Use also a bone hook for the crocheted border. Three skeins of floss will make two hoods.

Cast eighty stitches onto one needle. Knit plain garter-stitch back and forth until you have a piece two fingers long—a quarter of a yard. Divide the stitches into forty each. Knit plain garter-stitch back and forth on the first forty, until six fingers is done; then bind off. Do the other forty the same, except knit eight fingers long before binding off. Finish by crocheting a shellwork edge around the whole. Gather the broad front of the hood on top and place a bow of ribbon with pretty loops on this. Draw up the ends of the tabs and finish with tassels. The hood is to be worn with the bow on the hair, the short tab hanging, the long one passed under the throat and thrown over the left shoulder. It is soft, pretty, and comfortable.

Pig Products—How to Cure and Cook Them.

MARGARET J. ASHTON.

Pigs not over one year old make the best meat, but do not give you much lard. Do not cut up the pig until the next day after slaughtering. To pack for salt pork, see that your barrel is perfectly clean, put in a layer of salt two inches deep, then a layer of pork and cover with a layer of salt, until all your pork is in the barrel. Pack as tightly as possible, putting the rind of the pork next to the barrel. Pound it down with a wooden mallet, cover the whole with a strong brine made of rock or barrel salt; put an inside cover over the meat, with stones on it to keep it under the brine. If a scum rises on top, dip off what brine you can, and scald and skim. Add more salt, and pour over when cold.

To Prepare Hams for Smoking.—For one hundred pounds of meat take nine pounds of salt, three pounds of sugar, two ounces of saltpeter, one ounce of soda, and six gallons of water. Leave the hams in the brine three weeks; then smoke them. Corn-cobs are excellent for smoking hams.

To Prepare Beef for Drying, keep it in just two weeks, and then hang it up to dry.

To Keep Ham for Summer Use, slice a smoked ham, being careful not to leave in any pieces of bone. Have ready a kettle of melted lard. Pour in enough to cover the bottom of a three-gallon jar; put in a layer of sliced ham; pour more lard in to cover it; another layer of ham, and so on, until your ham is all used. Then pour enough lard on top to cover it well, so that you can not see the meat, to exclude the air. When cold, cover well. In the summer, when you wish ham, take out a layer, and heat lard and pour it on top.

To Boil a Ham.—Take a ham that weighs about ten pounds, soak it over night in cold water, put it in a kettle and cover it with boiling water and add a little vinegar. Boil slowly two and one-half hours. Let it get partly cool in the water; then take out and skin. Cut off most of the fat on the outside and the smoky part; put in a dripping-pan; brush over with beaten egg; then sprinkle over it crackers or bread-crumbs rolled fine, and bake one hour. Slice the best of it, and what is left chop for ham-sandwiches.

Broiled Ham.—Cut thin slices and put on a gridiron over coals, turning often, the same as beefsteak. Butter and serve hot.

Ham and Eggs.—Fry the ham slowly, so that it will not get hard; place it on a platter in the warm oven. Put more lard in the spider, and when it is hot, drop in your eggs and throw hot fat on them with a long-handled spoon. Put one or two on each slice of ham.

Ham Omelet.—Take three eggs and beat them together. Add half a pint of chopped boiled ham, and fry brown in butter.

Head-Cheese.—Clean a hog's head well. Put in a jar, in brine, the head, tongue and heart. After forty-eight hours take them out and cook them in cold water until tender; take out the heart and tongue, and let the head cook until the bones will come out. Chop the heart and tongue. When cool, take the bones out of the head, chop, and add to the other meat. Season with salt (if not already salt enough), powdered sage, and a little pepper. Mix thoroughly; add enough of the water the head was cooked in to moisten the cheese well. If you have a cheese-hoop, put it in a cloth or strainer, and place it in the hoop, putting stones on top, and leave it until the next day. It can then be sliced cold for lunches or teas.

Souse.—Clean pigs' feet and ears thoroughly, scrape with an old knife, add a little salt, put in a kettle of cold water and boil until tender; skim into a jar. Heat two quarts of vinegar; add spices if you wish; pour over the meat, and in a few days it is ready for use.

Ham Sandwiches.—Take small pieces of cold boiled ham (that will not slice nicely for the table), chop fine with a little cold tongue. Make a dressing of half a pound of butter, the yolks of two eggs, a spoonful of mustard, and one-fourth of a teaspoonful of salt beaten together. Spread the slices of bread with butter, then with chopped meat, and cover the meat with dressing.

Sausage.—Ten pounds of chopped meat, two ounces of salt, half an ounce of pepper, half an ounce of saltpeter, half an ounce of fine sage, and one ounce of sugar. Mix thoroughly. You can chop or grind the meat. Pack in two jars and cover with hot lard to keep the air out. The sausage is better and healthier if half, or a larger proportion, of beef is used than all pork.

Roast Pig.—For dressing, take all the pieces of bread you have, then cut slices from a loaf for the rest. Have a dish of cold water near you; dip each piece into the water and out again; crumb into a deep dish until you have plenty; add a cup of melted butter, plenty of powdered sage, and salt. Mix well together. Do not have your dressing too salt, but so that it crumbles. See that the pig has been well scalded and cleaned. Wipe it dry, outside and inside, rub salt all over the inside, stuff with dressing and sew up tightly. Skewer the legs back so that the under part will brown well. Rub well with flour; then put in a dripping pan in a hot oven. After it has been in half an hour, take out and rub with a cloth greased in butter, and put back in the oven. Baste often with melted butter, which is well salted. When it is thoroughly done, serve whole on a large platter, garnished with parsley, carrot leaves, or celery tops.

Spare-Rib.—When they cut up the pig, see that they plan the spare-rib so that it is thick, good and not like a lantern, so you can see through it. Hang it in a cool place until you are ready to use it. Put it in a dripping-pan with the meat side down until hot; then take out and put salt in the bottom of the pan and a cup of hot water; baste often. When the water is cooked out, add more; if the fat cooks out of the rib, pour it off in a dish; turn over and cook slowly. Better cold than warm.

To Keep Lard Sweet.—In the spring, if you have a jar or two of lard, melt it in an iron kettle, slice a few potatoes, and dry with a cloth. Put in the lard and cook it slowly until crisp or brown. Then skim out and strain the lard in a clean jar, and it will be like new.

To Fry Salt Pork.—Slice the pork the night before, and put in sour milk. The next morning wash it with warm water until the water is clean; then flour and fry. If you wish, after it is partly cooked, dip in beaten egg, and fry.

Crocheted Ear-Muffs.

Starlight Saxony yarn of any desirable color and a fine bone hook will be needed for these very comfortable articles. A piece of elastic is sewn to them and passed over the top of the head under the hat. The directions are for the right ear; make the left the same, reversing the pattern.

Make a chain of eight stitches.

First row: One double crochet in each of three stitches of chain, one treble crochet in each of three stitches, four treble crochet in the last stitch of chain, treble crochet in next stitch of chain on the other side, one treble crochet in each of three stitches, two double crochet in the next two stitches, join with a single crochet to the first double crochet.

Second row: One double crochet in each of eight stitches, two treble crochet in the next stitch, one double crochet in the next, two treble crochet in the next, four treble crochet in the next, three double crochet in the next, two treble crochet in each of the next six stitches, three treble crochet in the next, join with single crochet to the first double crochet.

Proceed in this way for four rows more, increasing at every stitch where the increase was, in the previous rows. From this point (that is, after six rows are made) the rows are worked backward and forward, not joined at the beginning, so as to leave the opening for the ear.

Seventh row: Twenty-four treble crochet, narrow by missing one treble crochet, twenty-eight treble crochet, turn.

Eighth row: * One treble crochet, miss one treble crochet, one chain, * narrow on the twenty-fifth stitch by missing two treble crochet, repeat from * to *, turn.

Ninth row: Like the eighth row.

Tenth row: One treble crochet, three chain, nineteen times.

Run a fine elastic cord through the last row to make it fit the ear nicely.

Christmas Puddings.

The best pudding-bag is made of partly-worn ticking. A tin mold can be used in every case, if you have one. All boiled puddings must be plunged at once into boiling water, and the water must never for a moment be allowed to cease boiling. To dish a pudding, plunge it for a moment into cold water, and it will turn out without breaking. If these simple rules are followed, there can be no mishap. Many cooks always let a plum pudding stand over night before boiling. It develops the richness of the fruit and spices, and they seem to amalgamate more thoroughly.

Dr. Ketchener's Plum Pudding is of medium size and richness. Mix six ounces each of finely-chopped suet and stoned and chopped Malaga raisins; eight ounces of currants, washed and dried; three ounces each of fine bread-crumbs and flour; four ounces of sugar; a half teaspoonful of cinnamon, and half as much mace; one ounce of candied lemon peel, and half an ounce of citron, both shredded. Beat three eggs with half a pint of milk and half a teaspoonful of salt, and add this to the rest of the ingredients. Mix thoroughly. Wring a pudding-cloth out of hot water, flour it inside, pour in the pudding, and boil six hours.

A Plainer Plum Pudding is made with half a pound each of flour, suet and raisins; four ounces of sugar, half a pint of milk, two eggs, and a teaspoonful of mixed spices. Boil two and a half hours.

Plum Pudding Without Eggs.—Chop half a pound of suet and mix it with one pound of flour, one pound of stoned raisins, four ounces of bread-crumbs, a gill of molasses, a pint of milk, a grated nutmeg, and half a teaspoonful of cinnamon. Boil four hours.

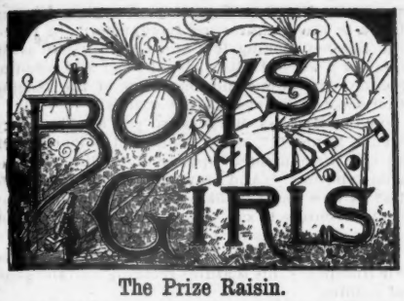
Nonpareil Plum Pudding.—Beat seven eggs, the whites and yolks separately. Add half a teaspoonful each of nutmeg, cinnamon and salt, the grated rind of two lemons, half a pound of sugar, half a pound each of raisins and currants, and half a pound of citron and candied lemon-peel sliced thin and mixed, one pound of fine bread-crumbs, three-quarters of a pound of suet, the juice of a lemon, and two glasses each of brandy and sherry. Beat very smooth and boil six hours.

A Small Plum Pudding.—Small as this pudding is, a small family will be able to put away half of it for New Year's day. Pour a large cup of milk over a pound of bread-crumbs, and let them remain for an hour; beat in four ounces of sugar and half a pound each of suet and raisins; add the grated rind and juice of a lemon, and four beaten eggs. Boil five hours.

Pudding Sauce.—Put two cups of powdered sugar, one egg, and half a cup of butter into a cake bowl and beat until like ice-cream. If you have a Keystone egg-beater, this can be made in three minutes.

A Pretty Fireplace.

An unused fireplace is an ugly and unattractive object. We do not mean the old-fashioned fireplace, with brass fire-dogs and great logs, that even when not lighted can be made pretty with evergreens and autumn leaves, but the fireplace with an ugly black grate, or, worse still, a hole for a stove-pipe. In a dear old country-house, where we are a welcome guest, we recently saw a fireplace so ingeniously hidden that the nook became a thing of beauty. A folding screen covered with red and gold wall-paper was placed in front of it, and at the foot of the screen was a long box filled with ferns and other plants which thrive without sunshine. This room was heated from an adjoining room, so that the decoration could remain summer and winter; but, where it is necessary to light a fire in winter, the screen and box are easily moved to any part of the room. In place of the screen one might use a large mirror, framing it with pasteboard and some suitable wall-paper or gilt-paper.



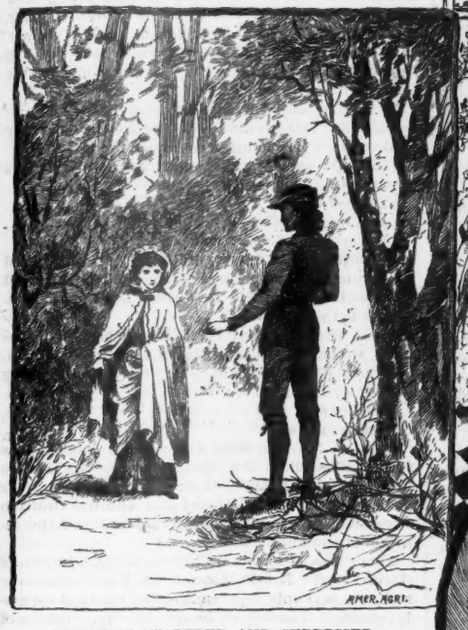
The Prize Raisin.

A Christmas Story of the Seventeenth Century.

AGNES CARR SAGE.

"Bless your dear heart, Mistress Margery, and thank ye kindly for bringing this heavy basket down to me yourself," exclaimed Dame Creamly, her round, apple face expanding into a broad, beaming smile, as she drew forth the savory articles of Christmas cheer sent her from the great house. "Pray bear my humble thanks and respects to your aunt, for sorely would we poor folks fare these troublous times were it not for Sir Humphrey and his good lady."

"And you and your son are to come up to the Hall, to-morrow night, at early candle-light, and join in the merry-making in the big kitchen," said Mistress Margery.



MARGERY STARTLED AND SURPRISED.

"Never fear, we will be on hand, though verily I misdoubt Sir Humphrey is as lightsome of heart as in years agone. But how is your sister, Mistress Elizabeth, this misty weather?"

"Not so well as I could wish," sighed Margery, the happy glow fading from her face. "She declares that nothing ails her, yet every day she gets thinner and whiter, and seems to care not a whit for the Christmas mummings in which she used to so delight."

"Alack, poor lady! No doubt she pines for Master Harry. Such a bonny young gentleman as he was, and so fond of her, too! Ah, well-a-day! The king is secure on his throne, but at a heavy cost, I trow! Marry, Mistress Margery, is it true that you have never heard aught of the young Master and know not whether he be on earth or in heaven?"

"Never a word, and his name is never mentioned at Green Court. Sir Humphrey disowned him when he joined the Duke of Monmouth's army, and says it is as though he never had a son."

"Alack, alack! And my lady?"

"Outwardly she agrees with her husband, but sometimes I fancy her heart cries Nay, though she be as staunch a royalist as any of us."

"Lack-a-mercy! But was she not a mother first?"

"True, Goody, and much I wish my Cousin Hal had not been so hot-headed and so foolish in his attachment to that wily pretender. But, bless me! the shadows are falling and I must away at once; so good-night to ye, and a very merry Yule."

It was a clear, crisp Christmas Eve, in the year of our Lord 1685, and the "peace and good will" of the happy, holy season came with peculiar significance after the turbulent waves of strife, dissension, and direst cruelty which during the past twelve-month had swept over the land and through which James Stuart had passed to the throne of England, which he now held, as it were, at the point of the sword.

But winsome, thirteen-year-old Margery Dalrymple bothered her pretty head little about affairs of state, as she skipped lightly over the frozen ground in the direction of the Hall, for her brain was busy with things nearer home. "Ho, ho," she thought, "can Dame Creamly be right and it be Hal Penderill that Bess is wearying her dear heart out for! Faith, and he was a right merry lad, and I loved him dearly myself! I wish I could learn some tidings of him with which to bring back the

"IT IS FOR HAL THAT I PLEAD."

"MARGERY THRUST IN HER HAND."

roses to my sweet sister's cheek, but, alas! I fear he is dead, or if not, Sir Humphrey would never allow him to enter Green Court. He is such a stern man and cares for scarce anything but his dogs and the King."

These thoughts had hardly flashed beneath the brown curls hidden in the blue, wadded hood, when the little maid was brought to a startled standstill, and uttered an exclamation of terror, as a dark figure suddenly stepped from behind a tree and stood directly before her in the lonely woodland path, saying in a low whisper, "Hist, Margery! For it is Margery, I swear! Dost thou not know me, little one?"

"It is—yes, it must be Hal!" gasped the girl as soon as she found voice to speak. "But, lack-a-mercy! how you frightened me, and why do you come here in this secret fashion and that rustical dress?" and the little lady glanced with some disdain at the young man's coarse breeches and leather jerkin.

"Because a fugitive dare not be seen in velvet and lace ruffles; but, sweetheart, is this all the welcome you have for your worthless kinsman and old playfellow? Can it be they have turned even you against me?"

"Nay, nay," half sobbed Margery, whose affection and loyalty were struggling fiercely for the mastery. "I am glad, truly glad to see thee!" and throwing her arms around her cousin's neck, she kissed him right warmly. "But where have you tarried all these many months?"

"In Holland, sweetheart. There were hard knocks at the battle of Sedgmoor, and afterward I but just escaped falling into Jack Ketch's clutches by the skin of my teeth, and got away to the Low Countries, where I lay for three months suffering from a wound in my leg. Only now have I ventured back to England, drawn by the longing I felt to see you all. But tell me of my father and mother. They are well, I trust?"

"Aye, but Sir Humphrey has forbidden that your name be spoken in the house under pain of his severest displeasure, and would have you turned from the gates should you appear there. Oh, dear Hal, how could you go so against his wishes and side with that impostor!"

"Because, forsooth, I never believed him one until after his own confession to King James; nor would you, Margery, could you have seen him and heard his voice. Never was there so fair-spoken a man, or one better fitted to lead men by the nose! You know the Taunton maids were all carried away by his comely countenance."

"Yes, alack! and suffered sorely for their devotion, poor wenches! But happy am I, Hal, to hear you acknowledge your folly."

"Yes, I see now that it was all a gigantic mistake; but, verily, we thought we were upholding the Protestant religion by fighting for Monmouth,

and now I have come all this way to confess my error and beg my father's pardon."

"He will never grant it—will never even see you."

"What! Not if thou plead my cause, fair Coz? Try what you can do for me 'twixt now and wassail time to-morrow, and, faith, you shall never regret it."

"I would indeed I could help you!" cried Margery, "but I see not how, for Sir Humphrey always overcomes me with awe, and I scarce venture to open my lips before him."

"Courage, faint-heart! Be brave for once," urged Hal. "Gain me but an audience and the rest will I do myself."

The girl shook her head doubtfully, but, as the pleading eyes looked imploringly into hers, "I—will—try," at length dropped slowly from her lips.

"That 's my own, true little kinswoman!"

"But mind, meanwhile you must stay snug at Dame Creamly's. If all goes well I will meet you at the side door of the Hall just after nightfall, to-morrow. If not, you must away again at once."

"We will see; and now, one more kiss for good-bye, and one for thy sister Bess, who, I hope, has not forgotten scape-grace Hal."

"Nay, I think she would be glad to welcome you;" and then Margery darted away, while her heart beat painfully when she realized to what she had pledged herself, for she spoke truly when she said she stood sadly in dread of her uncle and guardian, whom she only saw when home from school for the holidays. Indeed, in those days young people, in the presence of their elders, rarely ventured to speak until spoken to. But when she came upon her older sister in the great hall at Green Court, and noted how different she was now from the blithe, rosy Bess, of the Christmas before, she felt ready to brave a dozen Sir Humphrey Penderills if she could but bring joy to the one creature who, since her parents' death, she loved best of all the world.

That night, little Margery Dalrymple tossed restlessly on her couch in her small, bare, turret chamber, until, just as the Christmas bells rang out from a neighboring village, an idea came to her like an inspiration and, with a smile upon her lips, she sank into a sweet, dreamless sleep.

Sir Humphrey Penderill was truly a royalist of the royalists, as had been his father and grandfather before him. None had chafed more sorely than he beneath the dreary rule of the Protector, while he was one of the first to welcome the Stuarts to their own again, and bend in joyful allegiance to Charles II when he landed at Dover. He was a devout believer in the "divine right of Kings," and it was the severest blow the worthy baronet had ever received, when, shortly after James II succeeded his brother, his only child Harry ventured to question the lawful right of the reigning sovereign and joined in a rebellion which had broken out, headed by the Duke of Monmouth, who also aspired to the throne. Without flinching, however, Sir Humphrey at once denounced his boy as a "rebel, and a disgrace to the Penderill name," and disowned him from that day. As months glided by after the rising had been suppressed, and the leader, with many of his followers, had paid the penalty of his rashness at the hands of the executioner, and still no word of the gallant young fellow had come to the quiet, country home, he became more stern and more wedded to the ways of his ancestors than ever, and would not deign to try and learn aught of the fate of his son and heir. Despising the Roundheads from the bottom of his soul, he scorned their plain attire and wore the richest of velvet clothes and lace ruffles, and no one affected a longer flowing wig of curled hair, or bigger, brighter shoe-buckles, while he was always surrounded by a troop of the pretty, little, black-and-tan dogs made fashionable by Charles II, and which have ever since been known as "King Charles's spaniels." Christmas, too, a day never observed by the Puritans, was kept with peculiar honor at Green Court Hall, with fun and feasting for high and low. This 25th of December, 1685, was no exception to the rule. The tables groaned beneath their weight of roast beef, boar's head, plum pudding and mince pies, and in the afternoon large parties of young folks came, from far and near, to join with the baronet's wards in the gay, holiday festivities held in the great hall, while the servants and tenants made merry in the kitchen beneath.

Cheerily the holly and mistletoe gleamed on the stately walls, and serenely the portraits of dead-and-gone Penderills and Dalrymples beamed down upon the joyous groups that danced on the polished floor, where, however, none of the maidens were fairer than bright-eyed, sparkling Margery, as, in a pretty, quilted, scarlet kirtle and embroidered gown of silver grey, she coquettishly trod a minuet with Bernard Verney, a youth of fifteen and one of the pages to her majesty the Queen, but who at this time was off duty and spending the holidays at his father's house, in a neighboring county. Very confidential, too, they seemed, for they had long been the best of friends, and to the young courtier alone had the little maid confided the scheme she had planned for helping her cousin, but which she was almost afraid to carry out.

"A brave little couple, forsooth, and graceful withal!" quoth Sir Humphrey, who stood in the doorway; while Bessie turned away with a sigh, thinking, "Can he forget that it was Hal and I who won his praise in years gone by!"

Just then a servant entered with a huge, flaming bowl of snap-dragon, which was received with shrieks of delight by the merry children, who hastened to join hands and dance gayly around the dish of fire, chanting in chorus:

"Here he comes with flaming bowl;
Don't he mean to take his toll!
Snip! Snap! Dragon!
Take care you don't take too much,
Be not greedy in your clutch,
Snip! Snap! Dragon!

"With his blue and lapping tongue
Many of you will be stung,
Snip! Snap! Dragon!
For he snaps at each that comes,
Snatching at his feast of plums,
Snip! Snap! Dragon!

"But old Christmas makes him come,
Though he looks so fee, fa, fum!
Snip! Snap! Dragon!
Don't 'ee fear him, but be bold;
Out he goes, his flames are cold,
Snip! Snap! Dragon!"

At the same time, with frightened little screams and much laughter, they snatched gingerly at the burning raisins.

"Good speed to ye all!" called Sir Humphrey, as he turned away, with some of his particular friends and cronies, to seek the wassail-bowl in the withdrawing room. "And, remember, whoever gets the prize raisin,—the one with the gold button in it,—may ask of me whatever he or she most desires, and 't will be granted if in my power, even should the lucky one demand my favorite spaniel or best falcon. That is Christmas law at Green Court."

"Huzza!" and "Thank ye, thank ye, Sir Humphrey!" burst from the delighted youngsters, while only Bernard observed that Margery turned pale and trembled from head to foot.

"Now is your time, Margery," he whispered. "Don't look so woeful, but plunge in boldly. Such happiness to Lady Penderill and pretty Bess is sure worth a few blisters."

Thus urged, the girl marched bravely up to the bowl of snap-dragon, thrust in her hand among the red and yellow flames, and *kept it there!*

A little cry escaped her, while Bessie exclaimed: "Child, what are you doing? You will be sadly burned." But not until her fingers touched the raisin containing the gold button did Margery withdraw her hand, while she also brought out a number of burns on her soft, smooth palm and taper fingers.

"She has it! Margery has the button!" shouted the boys and girls.

"But it was not fair to feel round the bowl so long," growled one little chap, who had set his heart on possessing Chloe, the handsomest of the spaniels, but the others quickly stopped his grumbling by retorting, "A pretty notion, forsooth! Faith, we all could have done the same, and if you had chosen to blister your fingers as Margery has, you might have gained your wish as well. She must want something very much."

"Poor little fingers!" murmured Bernard, bending over his little friend's hand.

"But the worst is to come," she groaned, "for the burns are nothing compared to facing my guardian and mentioning the name he has forbidden us to utter."

"Odds-fish, girl! He is not an ogre to gobble you up, and I warrant he would give his wig for a chance to swallow his pride with dignity, and welcome gallant Hal home again."

"Nay, nay, I misdoubt that," said Margery. Nevertheless, casting one loving glance at Bessie, she walked with a firm step, though a beating heart, to the withdrawing room, where she found the baronet looking less stern than usual, as he quaffed a wassail with Colonel Bead and Admiral Seaton; but how could she know of the longing that was tugging at his heart-strings?

"Well, Mistress Margery, so you are the lucky wench to-night!" cried genial old Colonel Bead, as the little maiden appeared, holding out the golden button. "And pray what is your petition to be? A new heart-breaker to wear in your bonny curls, I venture to say, or some other gew-gaw such as you silly gigiets love."

"Yes, Margery, what is it you desire?" asked Sir Humphrey, his features relaxing into the ghost of a smile.

It was a favorable moment, and the girl seized it. "Nay, Uncle," she stammered, "it is neither heart-breakers nor gew-gaws that I wish; but—but forgiveness for——"

"For whom, pray? Is it Chloe? Surely the beast has not been in mischief again?"

"Nay, 't is not the spaniel, but one much dearer. It—is—even for my cousin—Hal, that I plead."

The name was out and Margery waited trembling, while an awkward silence fell on the group, and Sir Humphrey turned white to the very lips.

"Girl," he thundered at length, "Dost thou not know that that rebel's name is tabooed in this house?"

"Yes, yes," sobbed the suppliant, falling on her knees, "bnt he has come back sick and wounded, and so ready to confess that he was wrong, and beg pardon of both you and the King! O, dear Uncle, pray see him once at least! As the winner of the prize raisin, I ask this favor, which you are bound to grant. Remember, 'tis Christmas law at Green Court!"

"Ha, ha, gossip, the lass has you there!" chuckled Colonel Bead, "and I for one would be rarely glad to greet the young rascal once more."

"Did you say, Margery, that he acknowledges that the Duke was in the wrong?"

"Yes, sir."

"And he will ask my pardon?"

"Yes, yes, Uncle."

"Humph! Well, never yet has a Penderill denied the request of the winner of the gold button, and I, forsooth, cannot do less than my forefathers. Where is the fellow?"

"Just without, dear Uncle," and Margery, joyfully springing up and darting from the room, presently returned, leading the shame-faced young soldier by the hand.

"Father!"

"Harry, my son!"

And, as the two men looked into each other's faces and marked the change the last six months had wrought in each, their hearts melted, their palms met, and the Colonel and Admiral drank a "wassail" to the long-desired peace and the reunion of the Penderills.

Never was so happy a Christmas night known at Green Court! Bessie bloomed out like a rose in the sun; the servants and tenants, led by Jack Creamly, cheered themselves hoarse for the "return of the young Squire;" while Lady Penderill clasped Margery in her arms with such a loving kiss and grateful words of thanksgiving, that the girl almost forgot her smarting fingers and danced and sang for very joy.

So well was Sir Humphrey known as the staunchest of royalists, that he had little difficulty in procuring for his recreant son a full and free pardon from "his most gracious majesty," and before King James's short reign was over and he had been displaced by William and Mary of Orange, Hal and Bessie were married in the pretty village church, and Margery, in silver and white, figured as the daintiest of dainty bride-maidens; while she assured the gallant little page, Bernard, that she had been repaid a thousand-fold for the pain she suffered in plucking the prize raisin from the bowl of snap-dragon.

A Gentlemen's Club.

ALICE CHITTENDEN.

I hope none of the youthful readers of the AMERICAN AGRICULTURIST are given to the use of bad language, because I want you all to grow up to be gentlemen, and a true gentleman never swears. Still, if you go to school, you may sometimes hear much that you would not care to repeat in the presence of your mother or sister. Now, I want to tell you what Robbie Marshall did. He lived in

the country, and had never heard of the "Bad-Word Societies," which perhaps some of you have, but he was a little gentleman by nature, and disliked to hear the language used by many of his schoolmates. The boys wanted to raise funds for a large bob-sled to be used for coasting on a magnificent hill near the school.

"Tell you what, fellows," said Robbie, "let's have a club, and call it the Gentlemen's Club. One cent down to belong, and a cent fine for every bad word spoken; every boy to keep his own account, and settle with the treasurer once a week, and no tales to be told."

The boys were delighted with the idea, and such a restriction did this put on their tongues, that after a short time (except from the new members) there was very little income. One day the teacher overheard some of the boys discussing the matter, and proposed that a fine should be added for bad grammar, and that as a boy might use an incorrect expression without being aware of it, any friend who should overhear him should be empowered to correct him,—boys still to report their own offenses. Such remarks as "I seen it," "them fellers," "you was," and others of the same kind, which even children who know better allow themselves to use, are now seldom heard in the "Gentlemen's Club," and there is money in the treasury for the purchase of the coveted bob-sled.

This is only a hint for you boys—just a suggestion as to how you may help yourselves to become good and noble men. You might go even further and let your fines include unkind acts, or teasing words spoken to those younger than yourselves. It is a common occurrence in a school-yard to see older boys teasing those younger than themselves. Boys sometimes tease their sisters, and forget to help their mothers by the performance of such small duties as carrying fuel and water. All of these little matters are worthy the consideration of a "Gentlemen's Club."

A Little Girl's Christmas.

JENNIE S. LATHROP.

Netta Grey was only twelve years old. She lived in the country, and she had very little money to spend on Christmas, but she had so many friends and relatives, and, oh, *such* a big heart! She had one thing that all little girls have not—a big, old-fashioned garret, with all sorts of queer treasures in it, where she was allowed to rummage all she pleased. She had something else which I wish every little boy and girl had—a sweet, happy, loving and contented nature; so she did not fret and worry her mother by asking her to buy expensive materials to make up into presents when she knew her mother could not afford to do so. Still, when Christmas came, she had a present ready for every one, and this is how she managed it.

Throughout the whole year, ever since the last Christmas, Netta had had an eye to the coming one. In one side of one of her big bureau drawers she had laid by every scrap of material she had been able to get that it was possible in any way to work up into a present for anybody. She had kept also directions for all sorts of fancy-work cut from newspapers. In the other side was laid her finished work, for Netta had put the love and the spare moments of a whole year into these gifts.

For Grandpa she made a sandbag. Grandpa was confined to his room a great deal, and was always troubled with cold feet. A bag was made of coarse, unbleached muslin, about twelve inches square, filled with sand and sewed together. To cover this a slip-case was made of dark red canton flannel. After the muslin bag of sand had been heated in the oven, it was put in this case and tied up with a ribbon. Just because there was so little work about the making of this, the dear little loving heart was not satisfied until she had embroidered Grandpa's initial in old-gold crewels in the center of one side.

For Grandma's easy-chair she made a slumber-pillow. This was composed of two pillows a foot long and nine inches wide. She had nothing in the way of China silk to cover them with, only pieces of two of her pretty chintz dresses, and she had no sachet powder with which to perfume them; so, inside of the rolls of cotton batting she wrapped a few handfuls of fragrant marsh-hay, containing much mint and calamus, and the dear old lady declared that it took her back to the days of her girlhood when she used to go a-haying. If you wish to make the covers for these pillows, take two pieces of cloth twelve by eighteen inches; double the long way and sew with a seam. Gather one end up tight and finish it with a small fancy button to hide the stitches. Put in the roll of cotton, and gather the other end in the same way. The two pillows are tied together in three places at the top, and hung over the back of the chair, one in front, and one at the back.

You never would guess what she made for Mamma. Just a set of kettle-holders. These were square pieces cut from an old quilt, or pieces of heavy, old cloth, with covers of gay-colored merino, rep or flannel, that Netta had been able to find in the big garret. She made one for "best" of a piece of Auntie's quilted satin cloak-lining, backed with a piece of chamois pinked around the edges. On this she had lettered in black ink, on the chamois side, "Polly put the kettle on, and we'll all take T," only, in place of the word "kettle," she outlined a kettle with India ink.

She made a pretty tea-cloth, for each of the younger children, from a worn-out table-cloth. This was done with Mamma's assistance. The best parts were cut in squares or oblong pieces of a neat size to go under a child's plate, and fringed, or a hem basted in and feather-stitched with red marking-cotton. In one corner of each cloth Mamma drew a figure from her book of Kate Greenaway pictures, and the little ones never tired of looking at "the pitty durls" that peeped from under their plates.

For Papa she made a slipper-case from a wonderful piece of dark green broadcloth that Mamma said had been the skirt of Grandpa's greatcoat many years ago. It was a lovely shade, and when Netta had worked "Papa" on it in old-gold silk, and had outlined a slipper in cardinal above it, it was a piece of work for any little girl to be proud of. It was made of an oblong shape, just big enough for the slippers to go in and out of easily, and was suspended by two loops, one at each of the top corners.

Although Netta had so little to give, she did not forget those who were poorer then she. In the garret she found quantities of worn stockings and socks. Of these she made the cutest and warmest little shirts and skirts for the twin babies of the poor woman who lived down the lane, and whose husband was dead. To do this she cut off the legs, cut them open at the seam, and sewed two or more together for the body; catstitched or herringboned all the seams, and left the top of the stocking for the bottom of the shirt or skirt. She left a space for the arm-holes, and fitted it to the neck and shoulders after a paper pattern of the desired size. The neck and front seam she bound with tape, and then worked two button-holes in front, and sewed on little pearl buttons. She cut the sleeves from another leg, sloping them toward the wrist. For the little skirts she sewed as many together as were necessary for the desired width, and finished them with a shell in crochet.

I think Mamma had a hand in the planning and doing this good work, but Netta did much of it herself.

Remember, children, that if you are too poor to give anything to your own friends, there is always some one poorer than yourself for whom it is in your power to do something. When you do a kind deed to one of these poor little ones, the Christ-child will say, "Ye have done it unto me."

Not Very Puzzling.

BURIED CITIES.

This will claim a constant thought,
Or you will never tell
Where here there are two cities hid,
And hidden very well.

WORD PUZZLE.

Cut off my head, I am an English lord;
Cut off my foot, I am a luscious fruit;
Cut off my head and foot, and then you'll see
Something that's owned alike by man and brute.

Cut off two final letters from my name,
A summer vegetable then is seen;
But when my whole appears, I know you'll say
'Tis fit to deck the forehead of a queen.

CHARADE.

In stormy sea or placid lake
The fisher seeks my first to take;
To lonely swamp, or fenny bed,
My second lures the sportman's tread.
My whole's a prison, dark and drear,
Where captives pined for many a year.

ANSWERS TO PUZZLES IN NOVEMBER NUMBER.

Letter puzzle, Homer; word puzzle, knot; descriptive initials, E. P. Roe, Florence Nightingale, Edgar Allan Poe, Ida Lewis, U. S. Grant, Adelaide Proctor; word square,

HOPE
OVAL
PAIL
ELLA

Christmas Games.

If you are to entertain a large circle of young folks of all ages at Christmas, it will be well to provide yourself beforehand with a list of amusing games.

"Fling the Towel:" Let the company form a circle, with one of the players in the center. One member of the circle then flings a large towel, aiming to hit some other member. If the player in the middle is adroit enough to intercept it and catches the towel on its way across the ring, he takes the place of the one who threw it, who then takes his stand in the middle. If it hits the one at whom it was aimed, he must try to get rid of it by throwing it to another player before the one stationed in the middle can catch it.

The game of "Santa Claus," which is not unlike that called "Donkey," is great fun. Tack upon the wall a big white sheet. Make a large paper Santa Claus; cut off his head, his feet, his arms, legs and pack; cut off his ears and nose; cut out his eyes, and paste his body on the sheet. Blindfold each player and give him a portion of the Saint's anatomy, and let him place it where he thinks it should go. You can have a bit of dried mucilage on the backs of these bits of paper, so that they can be moistened and stuck to the body. He generally turns out a most peculiar looking saint, with one eye on his heel, another on his thumb, his head where his feet should be, and nothing in the right place. You can have two simple prizes—one for the person who comes nearest being right in the placing of some member, and a booby prize for the one farthest out of the way. We have seen a whole roomful of grown people convulsed with merriment over this game.

"Gossip" is amusement for the older ones. All sit in a circle. One communicates a piece of gossip about some person in the room, who proceeds to tell it to the one next, and so it goes on until the last one is to repeat aloud just what he hears, and the starter gives the original sentence. They are generally just about as far apart as the gossip started at a sewing circle is from the same piece of news when it has made the village rounds.

"Metamorphosis:" Let each member of the company be furnished with a sheet of paper and a pencil. Let him draw at the top of the sheet the head of some bird, beast, fish, or human being, and fold down the sheet so as to leave nothing exposed except lines to show on what part of the paper the body is to be placed. He then passes it to his next neighbor, who draws on it a body to suit his own fancy. It is then folded and passed to the next, who must draw legs, two or four. When the papers are examined, some very curious monsters, unknown to natural history, are displayed.

"Apprentice" is not too intellectual for the little ones. One of the players begins by saying, "I have apprenticed my son to a butcher," or dry-goods merchant, or to any tradesman, and gives the initial of the first thing his son sold. The rest must guess what the article sold was, and the one who guesses right must then "'prentice" his son.

A Labor-Saving Wood-Box.

In the house of an old-time AMERICAN AGRICULTURIST reader was observed this device for bringing in wood for kitchen use: An opening is made in the partition and a box inserted, half in the kitchen and half in the shed, with a cover opening into each room. A sloping board is arranged in the box so that the wood on being placed in the shed side will roll down to the kitchen side of the box. This arrangement may also be found labor-saving even when the wood-shed does not adjoin the kitchen, since in any event it will shorten the distance of carrying the wood, and avoid opening doors, and bringing much dirt and chips into the house proper.

FROM NEAR AND FAR.

A New Wheat Region.

It is a significant fact that the acreage devoted to wheat in the United States has failed to keep pace with the increase of population, at the same time that the average yield per acre has fallen off. New York, Ohio, Illinois, and the States west of the Mississippi, have successively been regarded as wheat-producing centers, and have all fallen off. Illinois, which was once supposed to be "the granary of the continent," has, for several years, produced less than enough to supply her own consumption. But, while the area and supply of winter wheat have been decreasing, the newly-opened regions of the Northwest bid fair to produce an abundant supply of the now-famous "No. 1 hard" spring, the best wheat for bread-making in the world. The great reservation in northern Montana, which was opened to settlement last year, will add greatly to the available wheat area of the country. Its area is equal to that of the three States of New Hampshire, Vermont and Massachusetts, and nearly all of it is arable land. It is a plateau 1900 feet above the ocean level at its eastern extremity, rising gradually to 3000 feet above, at Great Falls, near its western. This plateau is fanned by the warm Chinook winds from the warm currents of the Pacific, bringing moisture in summer, and tempering the severity of winter. The Milk River Valley, which extends 200 miles through this region, was the favorite feeding-ground for the countless herds of buffalo, whose bones whitened the ground when the reservation was first opened, but are now being gathered up, at the rate of over a hundred tons a day, and shipped eastward. In every part of this region, where wheat has been sown, a large yield has been secured. The seed is sown in February, as soon as the Chinook winds have thawed out the surface. It is ready for the harvest during the latter part of July, yielding from twenty-five to forty bushels per acre. Millions of acres lie open for homestead entry, and it does not require any very vivid imagination to see in the near future the entire Milk River Valley waving with yellow harvest fields.

T. G. HARRIS, Cascade Co., Montana.

Homesteading in Colorado.

One hundred miles east from Denver and fifteen from the nearest town and railroad is where we pitched our tent and took possession of one hundred and sixty acres of Uncle Sam's land. The climate is fine, and the atmosphere so clear that at times the smoke from an engine fifteen miles away can be easily seen. Early in the morning, when the air is still, a person talking in a loud tone can be heard two miles. We have here the phenomenon of mirage. Tall chimneys, houses and trees loom up, and as quickly disappear. In riding across the country, one is lured on by what seems to be a large sheet of water, but never reaches it. There are no trees except those set out on tree claims. One peculiar feature of the country is the sand creeks. They contain no water except in a freshet or very heavy rain, and it all sinks into the ground in a few hours, leaving the red sand and gravel so dry one can walk across dry-shod. The sand is nearly two feet deep, and teams hauling heavy loads very often become stuck in it; and, as the banks are quite steep, they are to be dreaded. Many of the settlers dig holes and sink barrels in the sand for their supply of water. As it is surface water, it is not very wholesome. In digging wells, water is struck at various depths, from twenty to two hundred feet. As all cannot afford to dig wells, some are obliged to haul water from the neighbors', perhaps several miles. It is not pleasant to drink after standing a few days, and one longs for a good cold drink from the "moss-covered bucket that hung in the well."

Here we have no long evening twilight, as in the Eastern States. Darkness comes quickly after the sun sinks behind the hills. The evenings and nights are always cool. After hot days it is so cool in the evening that a wrap is needed out-of-doors, and a blanket on the bed is a necessary comfort nearly every night through the summer. The winters are very mild. There are not many days when the horses and cattle cannot be out, picking buffalo grass. In June the prairies are covered with cactus blossoms, and it is a sight well worth going a long way to see. They are in all shades of red and yellow. One feels like gathering an armful, but the thorns with which they are beset are worse than needles. The only way to get them is to use a long knife. The people are generally friendly and sociable—perhaps more so than in the Eastern States. If a new family moves into the neighborhood, instead of calling on them, the nearest neighbors hitch their horses to the big lumber-wagons and the whole family goes and spends the day. Remote as we are from any stores, it is a serious question what to get for a company dinner, especially when not prepared for them. We have preaching once a month, in the little red schoolhouse. That is better than no meeting, yet we miss the advantages of church and Sunday-school which we had in the East. The young people indulge themselves once in a while with a dance, when they can find a fiddler and some one who will move out their stove and bed, and give the use of their one room, which is all that most settlers have. We sometimes think the people have more real enjoyment here than in the older communities. People living in the East, who have their mail delivered at the door every day, can hardly realize what a pleasure it is for us to get letters and papers from home. Mail-day, which comes twice a week, is almost a holiday for us. We find here very pretty specimens of moss agate, smoky topaz, agatized wood, Indian arrow-tips, etc. We are not in the irrigating district of Colorado, but have had an abundance of rain, and crops are looking finely, which is very encouraging to the farmers. There are few houses here except those made of sod. They are warm in winter and cool in summer, the walls being nearly three feet through. They are plastered on the inside, making a very comfortable house. The Chicago, Burlington & Quincy Railroad Co. have a road surveyed about two miles from here, and we hope soon to have the quiet broken by the noise of the whistle of the locomotive.

MRS. O. M. BURHAM, Washington Co., Col.

Scotch Farming on the Bay of Chaleur.

When Jacques Cartier, in 1535, sailed through the Gulf of Newfoundland and explored the Bay of Chaleur, it was on a sultry summer's day. Fresh from the cold winds of the North Atlantic, he named it, therefore, the Bay of Heat. But sultry days are the rare exception. Taking the average even of its spring and summer weather, it would be better named the Bay of Cold; while, if Cartier had come at any time between Christmas and Easter, he would have found his way blocked with masses of impenetrable ice. This is the hard fact which the farmers whose holdings are scattered along its shores must face. The growing season is brief; so brief that pasture can only be depended on for four months of the year; and, in ordinary seasons, from October to May snow is in possession of the land. This brevity of the growing season means a consequent hurry of work. I asked one of the most successful farmers how early he did his spring plowing. His eye twinkled as he answered, "In this country we do our spring plowing in the fall."

The haying is no sooner finished (at the end of August) than the harvest begins. The grain is no sooner under shelter than the potatoes and turnips must be dug and housed, and all made ready for winter. And this making ready includes the final preparation of the seasoned wood to feed all fires till spring, and the care of stock in the ample barns. After the first week in November the coastwise steamer is withdrawn, and, until she resumes her trips in May, the slow mail-carrier with his one-horse sleigh is the sole means of communication with the world.

One consequence of this short, cool summer is surprising to a visitor from the States. No corn is grown except by way of somewhat doubtful experiment in the gardens.

Another serious disadvantage, of which one hears far more complaint than of the long, cold winter, is the total absence of a market. The nearest railroad station is almost a hundred miles away, and Quebec, the nearest town of any size, much further. There is no local market. The population not directly engaged in tilling the soil is at this point made up of French (Acadian) fishermen. Their requirements are not great, and they are dependent upon the storekeepers for their supplies of flour and meal and pork. It is true that the lumber companies buy a little hay and grain in the winter, but there is no other local demand. As a result of this isolation the farmers have attained a high degree of independence. They are unusually intelligent; being, in the winter time, persistent and discriminative readers. But their wants are few and simple. They keep with little change to the good old ways, and draw almost all supplies from the products of their farms. So far as I can discover, the sole regular export is that of eggs, which are shipped by boat and rail, and boat again, to Boston, and for which the price obtained varies from eight to twelve cents a dozen. The wool clip is sent away, mostly to Prince Edward Island, to be carded. It is spun, woven, and cut at home, while, for the finer cloths, raw wool is exchanged at the mill. The carpets on the floors of the house where we are guests are all home-made in Scotch-plaid patterns, and are far more solid and restful to the eye than the large patterned, gaudy ingrains, which are too common at home. These are the drawbacks—the long, cold winter, and the lack of a market for the produce of the farm. But there are compensations. The land is strong and easily worked; a gravelly loam which repays the careful tillage it receives.

We had heard so much of the untamable wilderness of the Gaspé peninsula that we could hardly believe our eyes when we saw its fair fringe of clean and prosperous farms and white fishing-villages. The mountains of the interior, no doubt, are still as wild as they were when Cartier sailed up the bay; and we are not envious of the men who shall undertake to tame the miles of tangled forest which we one day crossed; but better land than these coast farmers cultivate no man ought to ask.

"Where do they find their ready money, if they have no market?" The question is a natural one. We asked it, and the answer was, "When we want ready money we catch fish." This crop is always at their doors in summer; and its product can always be sold. The vessels of the two great Channel Island fishing firms patrol these shores collecting codfish.

ISAAC OGDEN RANKIN, Eastern Canada.

Poor Farming in Nevada.

Poor farming shows up even in a good season. The most careful observer, when riding over the country, can see a marked difference in neighboring fields of wheat and barley, and a similar difference in orchards and vineyards side by side. The cause of this difference may at times be found in the soil, but in nearly every case the real cause is in the treatment that soil has received. As long as our farmers are content with scratching the top of the ground so as to barely cover the grains, just so long will their crop be weak and spindling and sparse; while our fruit-raisers plant their trees and vines in a rough-and-tumble way, and then keep the hoe and the plow severely away from them, fruit-raising will be a sickly farce, and the possibilities of our soil and climate will be kept hidden away under the cloak of careless management. Thorough, careful farming always pays here, as well as in the less-favored East.

JACOB KOENIG, Ormsby Co., Nevada.

The Indian River Country, Florida.

Indian River, properly speaking, is not a river at all, but a wonderfully beautiful arm of the ocean, from which it is separated by a narrow strip of land, overgrown with cabbage palms, scrub palmetto, hammocks and mangroves. Its center is an air line north and south 126 miles, with an average depth in the channel of eight feet, except in the narrows, where there is only a depth of three to seven feet. Its banks curve in and out in beautiful bays and grottoes, fringed with tropical verdure. A few large and small rivers and creeks, navigable for small boats, empty into Indian River from the west, while the waters of the Atlantic enter it at five different points, viz., Jupiter and Indian River inlets, Haulover Canal, Pepper's Haulover, and Gilbert's Bar. The first two probably are the only ones through which boats can pass except at very high tide.

Indian River is a sea without its dangers, a river without a current, and is from two to eight miles wide. Seldom is it calm, but is always in motion, from the winds. Large, handsome boats will ply its waters this winter as far as Melbourne, thirty-six miles south of Titusville, at its northern extremity. Small steamers and sail-boats carry passengers the full length of the river, and to Lake Worth or Key West.

About six miles east of Titusville is the mouth of Banana River. Ten miles north of Titusville is the Haulover Canal, connecting Mosquito Lagoon with Indian River. This canal is navigable only

for small boats. The best places for fishing are Mosquito Lagoon, near Oak Hill, New Smyrna, twenty-eight miles north, or Banana River, ten miles southeast, and Indian River Inlet, seventy-six miles south of Titusville. Deer and bears abound mostly at Merritt's Island, the Narrows, St. John's Prairie, west of Ft. Capron, or any of the isolated hammocks or scrubs, either on Merritt's Island, Indian, or Banana Rivers, or their tributaries. Wild turkeys are found west of St. Lucia River, 105 miles south of Titusville, or the north and south prongs of St. Lucia River. Snipe and small game are found in abundance all along the rivers. For ducks, Banana River and Dummit's Grove, near Haulover Canal, and Oak Hill. Camp and other supplies may be bought at Titusville and numerous other points in the Indian River country. Prices for goods are very reasonable—nearly equal to Jacksonville, with freight added. Good water may be had almost anywhere along the rivers by scooping out a shallow place about fifteen to twenty-five feet from the margin of Indian River.

J. BICKNELL, Brevard Co., Fla.

The Season in Ontario, Canada.

The official bulletin of the Ontario Bureau of Industries, computed from reports made on the 13th September by 500 correspondents of the Bureau, is just issued. I condense a few items. The rainfall in the Province has been below the average of the past eight years, for the same period. The hay crop is well saved. Excessive heat for a few days at the critical ripening stage caused a shrinkage in much of the grain, wheat particularly. Rust also affected it. The total yield of wheat is estimated at 19,772,081 bushels, which is 7,000,000 less than the estimated amount in the July Bulletin. Barley is fair, generally plump, and of a good, bright color, and the yield 23,516,030 bushels, which is 3,750,000 bushels more than any year except the last since 1882. Oats, owing to the rust affecting them, are not quite as heavy as last year, but the crop amounts to 67,666,053 bushels, which is 2,200,000 bushels more than last year. Peas, owing to heavy rains when half grown, are very poor, 13,669,519 bushels being only a slight advance on preceding years, while the area was greater by 74,000 acres.

While the pessimist and the chronic grumbler are still on hand, we can approach the annual Thanksgiving with thankful hearts for the blessings conferred on us as a people by the giver of all good. In our own county we have an abundance for both man and beast.

Lambton county's apple crop this year is good both in quality and quantity, but it is rather early to make an estimate on the number of barrels. The three counties of Lambton, Essex, and Kent are noted for their choice apples. Having Lake Huron on the north and Lake Erie on the south, the distance between the two lakes is only from sixty to eighty miles. Then on the west we have the beautiful blue St. Clair, with an average width of three-fourths of a mile. Lake St. Clair is twenty-six miles long by twenty-five wide. The Detroit river is a broad stream and there are numerous small creeks and rivers. The result is that the air is quite humid, thus giving protection from frosts. The soil is well adapted to fruit culture of all kinds. Our autumn months, September and October, are as perfect as they well can be, usually warm, with an abundance of sunshine. One of our largest orchardists in Lambton often harvests 1,000 barrels. Another in Kent last year had 2,000 barrels. These are exceptions, the bulk of the crop being secured in orchards of from fifty to three hundred barrels.

Our principal markets are our own Canadian Northwest, Manitoba, and England, some going also into the United States. Feelers have been thrown out by our shippers in the way of Denmark and other continental countries, which proved very profitable in the individual venture.

REV. JOHN MORRISON, Lambton Co., Ontario.

Pacific Coast Hop-Yards.

One of the most interesting out-door industries of California, Oregon and Washington is that of hop-growing. The total crop of the coast in 1888 was 90,085 bales. This year the estimate is for 87,200 bales, of which California will produce about 34,500 bales. The chief cause of the lessened crop is the scarcity of pickers, owing to which a portion of the crop will undoubtedly be lost. Almost the entire crop goes overland by rail; only 700 bales of the California crop of 1888 went by sea, and only 4,000 bales were used by the brewers of the State. California contains 4,735 acres of hop-yards, and Sacramento leads, with 1,190 acres; Mendocino next, with 1,050 acres. Nineteen counties in California raise hops, but there is no reason why most of the rest should not. Sonoma comes third in the list. There is plenty of suitable land in Sonoma, Alameda and Santa Clara to quadruple the present yield of the entire State, but hop-growing is considered risky, and the farmers prefer to plant orchards. In California, this year, the estimated crop per acre ranges from five bales to twelve bales. The average of the State is about seven bales per acre. C. H. SHINN, Alameda Co., Cal.

Apples for the North Pacific Region.

The great adaptability of so large a scope of country on this Northern Pacific coast, and also in California, to the cultivation of all the hardier fruits, has already resulted, in many localities, in an overproduction. In some sections, as in the Willamette valley, large quantities of fruit, notably of apples, are not of sufficient value to warrant the expense of gathering and shipping to market, or to evaporate into the dried fruit of commerce, or to grind and press for cider and vinegar. This is largely due, of course, to the prevalent high price of labor on the coast. The Gravenstein apple is, however, one noted exception; and for this fruit there seems to be a demand never satisfied. In its season here on Puget Sound no other apple is wanted in our markets. It is here what the Fameuse or Snow apple is on the island of Montreal and in the Ottawa valley, Canada, the Newtown pippin is to certain localities on the Hudson river, and the Albemarle pippin in Virginia. The tree is not limited to situations local in character, but succeeds everywhere here—on our high or low lands, and in a diversity of soils. On our deep, rich river-bottom lands it is found better to seed the orchard to grass. The fruit then will not be overgrown, but more uniform in size and appearance. Its season is in the early autumn, and when that is passed, the Tompkins County King apple soon begins to appear in our market. It is designated by many shrewd dealers as the "Winter Gravenstein." This cognomen seems to be satisfactory to the discriminating public.

As varieties go, and in its best condition, the Gravenstein is as near perfection, both in fruit and tree, as can reasonably be hoped for. But the codlin moth claims the Gravenstein as its own, and leaves other varieties to later comers. It works more largely in this variety than in others. And woe betide the fruit-grower who attempts to dry his surplus fruit of this variety exposed to the sun in open air. He will soon find that he has attracted an innumerable multitude of wasps and yellow-jackets, who will feed upon it, and until intoxicated with the juice, while the product of other sorts remains comparatively untasted. The writer, though filled with rage when viewing the remains (little else than a mealy powder) of his trayful of Gravenstein chips, consumed by these discerning insects, cannot find it in his heart to bring any very serious charge against them, seeing that they are subject to like tastes with ourselves.

J. F. CASS, Skagit Co., Washington.

Large Crops and Low Prices in Nebraska.

The Wood River Valley, running through Buffalo county, Nebraska, is not very wide, nor is it very thickly populated, but its appearance last summer and fall certainly has gladdened the hearts of the farmers, who have each a quarter section of land in it. The crops came up finely and heavily; corn husked out thirty to forty bushels, wheat yields forty to forty-five; oats, buckwheat, flax and timothy equally well, and the hay crop is unusually fine. Grass has been in good feeding order all season, and the bunches of well-fed stock evidence the fact. Corn and wheat are the principal grains grown, and oats may be counted with them. It is on these the farmer is depending. The yield was all right. Some wheat was lost on account of excessive rains, just when the grain was ready to cut, and the low-lying fields were drenched, but the average yield has been good, and no one complains on that account. The great grievance with grain-growers this year is the low price obtained for products. Eleven to fourteen cents for oats is rather small pay, and that is all the market will stand. Prices are low, and money is not only high, but hard to get. At this time of the year the feeders use lots of money, and their demands soon exhaust the supply of local banks. This makes it hard for a farmer who wishes to hold his crops to get money from the banks to meet his fall obligations. On this account collections are somewhat slow, as many farmers are very unwilling to sell at present prices, preferring to let their notes run in default until a better market offers.

JAMES ADELSON, Buffalo Co., Nebraska.

The Season in Illinois.

Since writing you last, we have been through some very remarkable climatic changes. We have had dry spells and wet spells; hot weather and cold weather. During August we had a long stretch of exceedingly cool weather, almost reaching the frost point. This was followed by a series of heavy rains, in turn followed by an excessively hot spell, the thermometer indicating as high a temperature as 92°. This culminated in very heavy rains, threatening disaster to crops on all bottom lands bordering upon creeks which have been full to the top of the banks and running over in the low places. The temperature has now dropped some 35°, and frost is again threatened (September 16th). No material injury would result from frost now in this locality, as the corn is about all safe, and the crop upon all well drained and well tilled land will be an immense one. The clover seed crop, which promised so much while in bloom, is almost an entire failure, and in many cases hulling it has been abandoned; in some instances the yield has been as low as one peck to the acre, where two bushels had been expected. Wheat has panned out even more than it promised, and yields of from twenty-five to forty bushels to the acre are common. Potatoes, although making a good crop, are now in a very bad condition from the ravages of grub worms. Many fields of fine potatoes are badly injured by this pest, in fact, rendered almost worthless for market. The price has been gradually advancing and promises to be much higher. Pastures have been greatly benefited by the late rains, and the land plowed for wheat is in excellent condition for seeding, which has now commenced, and a very large area will be sown to wheat this fall. The quantity of hogs is somewhat limited, especially early hogs. Late hogs will be more plenty, and as there is an abundance of corn, the quality will be excellent. Wheat is selling for seventy-two cents, oats twenty-five cents, corn thirty-five cents and potatoes twenty-five cents by car load; hogs from $3.75 to $4.25.

E. P. KELLENBERGER, Madison Co., Ill.

Texas as a Cotton State.

Texas is fast making herself a name as a cotton State. She is not only the largest but the most productive. Mississippi has hitherto been counted as the leading cotton State of the Union. But the statistics of 1886 show that Texas is ahead in the number of bales of cotton raised. Mississippi raised that year 952,390 to Texas's 1,499,698 bales, and the latter has been ahead every year since. So she is a grand State for the production of the fleecy staple, which is put on her market year by year in millions of bales.

Not only does she come to the front with this staple, in which she stands first, but she has other productions with which she could almost supply the European nations. She has worlds of corn and millions of bushels of wheat in her granaries. The latter she grinds into flour and ships over the Union, and to Europe, Canada and Mexico. In addition to this she has the finest beef in the world. Countless herds of cattle roam her vast prairies, and are shipped in all directions by her numerous railroads. Still, her pre-eminence is as a cotton State. W. L. MOORE, Denton Co., Texas.

Rain in Australia.

I wrote to you a few months ago complaining of lack of rain. The harvest was so bad that the government had to distribute 50,000 bushels of wheat. The conditions are now reversed. We had four rainy days, in which twenty-six inches of rain fell, and the ground is now so soft that it cannot be worked. The rain continues, with the ground so thoroughly soaked that nothing could be done in the orchards for the last three months. Twelve months ago we were nearly driven out by want of moisture. It has been a most extraordinary season throughout the colony. We are now (July) in midwinter, but as yet have had no frosts to speak of. It is more like spring, with such balmy weather as we look for here in October and November.

MATTHEW L. PEARSE, Sorrento, N. S. W.

OUR BASKET

Clearing Out Woodchucks.—F. T. Emmons, Suffolk Co., N. Y., writes us that after the greedy rodents had become so numerous on his farm that they took a large part of the crops, he found an effective method of destroying them. His method consisted of smothering them in their lairs. For this purpose he took old fertilizer bags, or any old rags, saturated them with kerosene oil or crude petroleum, and shoved one of them down into the hole with a stick. A sod was first cut large enough to cover the mouth of the burrow. The rags were set on fire, and then the sod put securely in place and pressed down so closely that no smoke could escape. When this method is employed in woods or hedges, a damp day should be chosen, to avoid spreading the fire.

Crop for a Clay Soil.—A. J. Sears, Weber Co., Utah: For a clay loam, somewhat alkaline, a good crop in your locality is esparsette. It has proved eminently successful, as a forage crop, in many parts of Utah, and would doubtless be equally well adapted to plow under as green manure.

Quinces on White Thorn Stocks.—Garret Ralston, Jefferson Co., Indiana: There is no reason why quinces budded or grafted on white thorn stocks should not be successful. Whether such bushes would be any better than if worked on quince roots can be determined only by trial. As a rule quince stock is preferable.

Rye in Peach Orchards.—M. L. Weaver, Caroline Co., Maryland: Rye is not a desirable crop in a peach orchard. If it is plowed under in spring, as green manure, the furrows must run so deep that the roots will be injured, and in any event returns little to the soil, except what it has taken out of it.

Ox-Eye Daisy.—William Grafton, Taylor Co., West Virginia: How to clear the fields of this troublesome weed is a question which is not easy of solution. If they are kept cut close with a mowing machine as fast as the blossoms appear, it will, in time, kill the plants so treated. But the seeds which become scattered from adjoining fields and roadsides germinate and produce more weeds. The evil is so widespread that nothing short of a general and persevering movement could eradicate it, and this is practically out of the question.

Short Courses.—Prof. W. A. Henry, dean of the Agricultural College of the University of Wisconsin, and better known as Director of the Wisconsin Experiment Station, writes: "We had forty students in our short course in agriculture last winter, and I think we shall have more this season. It is a great success, and might well be imitated by other colleges. It seems to fill an absolute want in the educational field. The comparatively small number of students we have had is due largely, I think, to the fact that the farmers do not yet understand the advantages offered. When the purposes of the course are better known, more students will come." This is one of the best of the short courses, and is being imitated in Vermont and one or two otner States by institutions which have received the benefit of the Land Grant act of 1862 without maintaining an agricultural college. The least these institutions can do is to maintain such a course in agriculture; but it is hard to induce farmer boys to attend these institutions. Somehow the influence of the regular students at such universities is not agreeable to the farmer "specials."

Fertilizers for Cabbage Plants.—Thomas H. Smith, Macon Co., Mo., wishes to use nitrate of soda on cabbage plants, and asks how much he should put in forty gallons of water. We do not know how strong a solution the plants would stand without injury. It depends very much on the amount of water in the soil. Nitrate of soda is wonderfully diffusive. It will run all through the water that is in the soil. As a rule, we should seldom put more than two pounds of nitrate of soda in forty gallons of water. It should be remembered that nitrate of soda alone is not what cabbage plants ordinarily need. Superphosphate is a specially useful fertilizer for cabbage, cauliflower, and turnip plants. A little nitrate in addition will be very beneficial. Two ounces each of superphosphate and nitrate of soda to the square yard is a liberal dressing.

White Lice on Cabbage and Turnips.—J. R.: Syringe the plants with a weak solution of kerosene emulsion. We have so frequently published directions for making it, that it is not necessary to repeat at this time, but we will do so before next spring.

Arkansas Fruits.—This region is perhaps as good for fruit as any part of the United States. Most of the fine peaches are raised on budded trees. There are peaches here now twelve inches in circumference, and I am informed that peaches of fourteen inches are not rare. Apples are, of course, much larger. I came here from Pennsylvania a few months since, and have never regretted it. A. S. POTTER, Carroll Co., Ark.

Nitrate of Soda not a Substitute for Other Fertilizers.—A. G. Murphy, Middlefield, N. Y.: We do not recommend nitrate of soda as a substitute for other fertilizers. But, for some crops and in certain conditions of the soil, these fertilizers do not contain sufficient nitrogen. If we want for a particular crop one hundred pounds of nitrogen per acre, and use a fertilizer containing two per cent of nitrogen, ten per cent of phosphoric acid, and six per cent of potash, in order to get the one hundred pounds of nitrogen we should have to use two and a half tons of the fertilizer per acre. To get the desired quantity of nitrogen we are compelled to apply more phosphoric acid and potash than we need. In such a case we prefer to use less fertilizer and supply the nitrogen by an application of nitrate of soda.

Strawberry Wine.—H. C. Canfield, Washington Co., Kansas: Mash twenty quarts of strawberries in a tub, press out the juice, and pour five gallons of water on the residuum; let it stand twelve hours, with frequent stirring; then press out and add to the juice. Stir in twenty pounds of refined sugar and three ounces of finely-powdered red tartar, and put all into a keg. Leave out the bung and keep the bung-hole covered with wire gauze, to admit the air and exclude insects. While fermentation is going on, keep the keg brimming full by adding sweetened water. When the fermentation subsides, rack off into strong bottles, which cork and wire. Keep the bottles lying on one side.

Top-Dressing for Grass.—Walter Clark, Wake Co., N. C.: A top-dressing of oyster-shell lime and nitrate of soda, on grass-land seeded last spring, would doubtless be highly beneficial. The two materials should not be mixed, however, but applied separately, with an interval of several days between.

Tomatoes as Food.—A. O. Black, Orleans Co., Vermont: The idea that eating tomatoes can in any manner cause cancer is utterly baseless. It is remarkable that such a superstition ever started, and still more so that it has any currency since its total falsity has been shown up repeatedly.

The Codlin Moth in Idaho.—G. H. Evans, Nez Perces Co., Idaho, writes us that owing to the depredations of the codlin moth, the pear crop in his section was entirely ruined, and this in spite of spraying the trees repeatedly.

The Bean Remedy.—G. G. Prey, Wyoming Co., N. Y., has tried the bean remedy to scare away potato-bugs. Potatoes and beans were planted alternately with the expectation that the scent of beans would scare away the bugs. The result of his experiment leads him to the conclusion that "the scent of beans keeps the bugs away about as much as a dish of honey would keep the flies away from a molasses barrel." Nevertheless, this experiment was not without its profitable results. Ever since that time he has continued to plant beans among his potatoes. Last year he harvested nine bushels of beans, and this year about twenty, without any apparent detriment to the potato crop. To get rid of the potato-bugs, however, he has not found any better plan than to use reliable insecticides as soon as the beetles make their appearance.

Raising Hops.—Jasper Blines, Clark Co., Mo., desires us to inform him whether hops are grown from seed, and what is the best time to plant them. Although hops can be grown from seed, this is not the usual way of propagating them. The best time to plant hops is in the spring, as early as the ground can be worked. The rows are made about eight feet apart, and the sets planted in these at about the same distance. Each set has two eyes, is planted about one inch deep and pressed firmly down. The first year, a hill of corn may be planted each way between the hops, but the second year, the entire ground is to be kept well cultivated. Where the hop louse has not made its appearance, the crop is generally a very profitable one.

Minerals from Georgia.—M. D. Spear, Haralson Co., Ga.: The specimen marked 1 is quartz rock, stained with peroxide of iron, a mass of which adheres to one end of the specimen. No. 2 is mainly sulphuret of iron (pyrites), of no commercial value. No. 3 is a laminated iron ore, sufficiently rich to be of some value. No. 4 is pure graphite, commonly called black lead or plumbago. It is a valuable mineral, and if the deposit from which this specimen comes is of sufficient magnitude, it may be well worth working.

Fertilizers for Grapevines.—W. B. K. Johnson, Lehigh Co., Pa., writes us: I have about seventy different varieties of grapes in my grounds, and all who see them express surprise at such healthy vines, number and size of bunches, and fine flavor of fruit. After much experimenting for five years with fertilizers I have found the following satisfactory: Cow manure, nitrate of potash, sulphate of iron, lime, and salt. The salt, copperas, and potash are applied early in spring as soon as the ground opens, the lime after a rain, and lastly the manure. Good cultivation has followed through the summer, and I have almost wholly escaped rot and mildew, while the vines of my neighbors were, with few exceptions, infested with them.

Wintering Small-fruit Plants.—E. Miller, Westchester Co., N. Y., desires information about keeping blackberries, blackcaps, and raspberries through the winter. These plants may be dug at any time before the ground freezes and will keep in good condition throughout the winter, if heeled-in in a dry situation where water will not stand during the winter. If the plants are needed in spring for shipment, before the ground is thawed, it is better to keep them in a cool cellar, covering the roots carefully with soil or damp moss.

Protecting Tobacco Plants.—O. Demers, Province of Quebec, Canada, writes us that having in previous years found his tobacco seed-beds nearly ruined by cut-worms, he last spring applied salt on his beds at the rate of one quart to every two feet square. It was evenly spread, before sowing the seed, and was wholly successful, not a plant being molested by the worms.

New Jersey State Grange.—Mr. John Statiser, Colt's Neck, Monmouth Co., is the present Master of the New Jersey State Grange, having succeeded Mr. Richmond Coles.

Ice.—However desirable an open winter may be for many kinds of work, the ice harvest demands at least a week of steady cold. Don't postpone. As soon as good clean ice, four inches thick, has formed, do not delay. Having a small ice-house, it was cheaper to get it filled by contract than to keep a set of ice implements and machinery. Of late we have had one of the ice companies that supply ice to the neighboring towns do the job. With abundant hands and horses, and all the needed facilities, they have usually made short work of it, and the arrangement has been satisfactory, except last year. There was good, if not very thick, ice last year until late into December. There was no need hurrying about our small job; they could put that in at any time. Their large houses were filled. A rain one night carried off all the ice, and it was forgotten to make any more. It being desirable to move the ice-house, that work was done in spring.

After the building was taken down, we found that several layers of ice were left—much more than we supposed—and, by covering it with an abundant layer of sawdust, we were not obliged to purchase ice until July.

Missouri Horticulturists.—The thirty-second annual meeting of the Missouri State Horticultural Society is to be held at Lebanon, December 3d, 4th, and 5th. Special rates are to be given on the railroads. Entertainment will be provided by the hospitable citizens of Lebanon for persons in attendance.

Raising Hoop-poles.—C. S. Lowrie, Huntingdon Co., Pa.: There is generally a ready sale for hoops wherever merchant-milling or pork-packing is carried on. They are also largely used as bands for packing-cases in New York, Philadelphia and other places where heavy goods are packed for shipment.

Out-Door Work.—This is often one of the most delightful of works, in which almost perfect winter weather prevails until Christmas or after. The soil does not freeze sufficiently to prevent digging, and all improvements which require digging may be done to better advantage than in the usually changeable weather of spring.

Seeds.—A market-gardener should also be an experimenter. He is quite safe in assuming that the seeds offered each year with such glowing praises are no better than the old ones, if, indeed, they be not the old ones with new names. Still, if one in five or ten of the new sorts is an improvement on the old kinds, he should know it; the only way to get the knowledge is to try.

A Prolific Fish.—Mr. Fred. Mather, Superintendent of the New York State Fishery Commission, sends us a statement of a computation he has made of the number of eggs in a sunfish. Taking a female fish whose extreme length was six and a half inches and weight five and a half ounces, he found by a very simple and accurate computation that it held, nearly ready for spawning, not less than 44,000 eggs. It is the habit of the sunfish to lay its eggs in nests made in the sand and gravel near the shore, where the male fish keeps guard over the nest until after the young fry hatch out.

Too Many Queens.—Jasper Blines, Clark Co., Mo.: Where unrestricted swarming is allowed, it is not an uncommon thing for third swarms to issue, with two or more young queens. When there are several queen-cells in the hive, in which the queens mature at the same time, the first one hatched naturally leads the issuing swarm. If at this time there occur several rainy days to prevent the swarm issuing, the bees will hold the caps upon the cells and prevent the young queen from escaping. In such cases, if the bee-keeper listen at the hive, the young queens may be heard piping. When the weather comes fair, and the swarm issues, several queens will be liberated and issue with the swarm. Such swarms frequently cluster in several bunches with the different queens. In the case referred to, they had evidently clustered together and stung the superfluous queens.

Apple-Worms.—L. P. H., Greenwich, Ct.: You say that the "leaves of your apple-trees turn brown and drop off," but this cannot be the result of the depredations of the canker-worm, as you suggest, because the canker-worms eat all the soft parts of the leaves while they are attached to the tree. It is quite probable that your apple-trees are attacked by some minute bark-borer, and these in their depredations are the cause of the leaves and branches dying. Strip the bark from some of the dead branches, and see if you cannot find signs of insect-work underneath. It would be useless for us to suggest a remedy until we know the cause of the trees failing. You might send us specimens of the diseased branches for examination, and thereby assist us in determining the cause of the disease.

Grass in Shade.—H. Y. L., Chicago, Ill.: We are unable to suggest anything that will kill out weeds that naturally grow in the shade, and insure a vigorous growth of lawn grass under similar conditions. But we would suggest that you give up the four feet of shaded ground to certain ornamental plants that thrive in such situations. You can make a border of the width you name and fill it with ivies, hollies, evergreen, Japan and Chinese honeysuckles, which will probably give you and your friends as much pleasure as a bed of weeds and sickly grass of the same dimensions.

Streaks in Butter.—Albert Taylor, Baltimore Co., Md.: Well-defined streaks of different shades in butter, giving it a calico appearance, are caused by throwing yellow and white butter promiscuously together, and then working the whole into a mass, according to the too-common practice of some country store-keepers.

Transplanting the Holly.—S. D. T., Linden, N. J.: The common American holly may be successfully transplanted from its native habitat to the garden, if severely pruned at the time of removal. If the trees are five or six feet high, cut away at least two-thirds of all the branches, or, in other words, shorten them to about one-third of their original length. You need not pay any attention to the buds on the stems or branches, for there are always enough latent or adventitious buds from which new shoots will spring in due time. When digging the plants, preserve as many of the roots as possible, but if one-half are preserved, and the top cut back, as we have directed, there will be little danger of failure. Early spring is the best season for transplanting the broad-leaved evergreen trees and shrubs.

Canker-Worms.—D. W. D., Hickman, Ky.: From the brief description of the caterpillar infesting your apple-trees, we conclude that it is the one widely known as the canker-worm. These caterpillars appear early in spring, just as the leaves are unfolding, eating all the green and softer parts of the leaves, until the mid-rib and larger veins are all that is left of them. Spraying the trees with London purple is an excellent remedy, but, if you fear injury to your poultry and honey-bees, you can try placing bands about the stems of the trees and keeping them smeared with coal-oil, refuse printer's ink, or any sticky material. As the female moths cannot fly, they must crawl up the stems of the trees in spring, in order to reach the branches and small twigs on which they usually deposit their eggs. Sometimes lead and tin troughs, made to fit about the stem, are used, these being kept filled with oil, or anything that will prevent the moths crawling over them in their ascent. In regard to leached wood-ashes, at two dollars per ton, we do not think you can find a cheaper manure, and would advise the use of such fertilizers in liberal quantities for all kinds of crops.

Coal-Tar for Posts.—H. P. Scofield, Bear Lake, Idaho: The application of hot coal-tar to the lower end of fence-posts will greatly increase their durability. The tar acts both as an antiseptic, and also as a repellant of moisture. It would pay to treat posts in this way with tar at seven dollars a barrel, for it is not alone the cost of new posts, but also the labor of replacing old ones, that is saved.

Mineral for Name.—J. Heiser, Snyder Co., Pa.: The specimen sent is a lime rock of the Niagara group. It is dark gray with a fracture glistening with crystalline laminæ of silica, and exhibiting nodules of hornstone. It is sufficiently pure to burn into lime for ordinary purposes.

Dairy Questions.—Subscriber, Essex Co., Mass.: As nearly as can be judged from your description, the shrinkage in the cow's milk was caused by temporary derangement of the digestive organs. Make a mixture of wood ashes, pounded charcoal, and salt, and place it where she can help herself to it *ad libitum*. For a young heifer, ground oats and bran, mixed with hay or corn-fodder which has just been cut up and dampened, are better than the oats cooked and fed clear.

Bean Weevil.—F. A. Sylvester, Essex Co., Mass.: The insect infesting the beans you send is the now common "bean weevil" (*Bruchus obsoletus*). It is closely allied to the pea weevil (*Bruchus pisi*), but is of a much smaller size. Although this bean-pest has been known to entomologists for the past sixty years or more, it is only of late years that it has become so abundant and destructive as to cause much alarm among those who cultivate the bean extensively. The female deposits her eggs upon the young pods of the beans while growing in the field or garden, and as the young grubs eat their way through the pods and into the young beans within, the hole closes behind them; consequently, when the crop is gathered in the fall, the presence of either grubs or weevils is not suspected; but, by the following spring, or sooner, the transformations of this insect are completed, and the weevils emerge and are then prepared to renew their depredations in the field. If all weevil-infected beans were destroyed as soon as the presence of the insect is discerned, it would doubtless check the increase of this pest. We do not know of any other way of getting rid of it.

Vermont Dairymen.—The Vermont Dairymen's Association will hold its twentieth annual meeting in the town hall, Rutland, Jan. 15, 16, and 17. This association has long held a leading position in the dairy world, and its meetings are always interesting and instructive. The interest of the coming meeting will be enhanced by addresses from men of national reputation, and the exhibition of the new Butter Extractor. Liberal premiums are offered for exhibits of butter and cheese.

The Farmers' Magazine.—For many years this was the name of a well-known English magazine, which has just been re-established in London, under the editorship of Henry F. Moore, the agricultural editor of the London *Times* and of Bell's *Weekly Messenger*. The magazine is a credit to English agriculture. Mr. Moore is a faithful worker in the cause of agriculture.

Protect Your Plants.—December is the proper time for the most important of all garden work—the protection of what are supposed hardy plants. It matters not however hardy a plant may be considered, it needs protecting in our climate. 'Tis true, many forms will endure the rigors of our winters; that is, they will live without protection. But they will not thrive luxuriantly, neither will they long live and bloom, if left to care for themselves. Our native plants, taken from the woods and given the best position in the border, will frequently succumb to the frost the first season. The reason is obvious: in their native habitat they are protected by Nature's own covering, newly-fallen leaves. In our gardens they need a more ample protection than that even, because they are more exposed. For the herbaceous border and tender shrubs, a liberal mulch should be provided. Cover your beds of bulbs, of all kinds, with coarse manure three or four inches deep. In the spring rake away all that has not rotted, and fork the ground over carefully so as to incorporate the manure well with the soil, which will at the same time be made light, without injury to the fine roots. Follow this plan up, and your bulbs, plants, and shrubs will give you flowers far beyond your conception of their capabilities.

To Preserve Butter.—After having well washed the butter, and carefully dried it with linen cloth, pack it in earthen jars, with special pains to make it solid, and leave no vacant spaces. Set the jars in a vessel of water brought to the boiling point. After fifteen minutes of this hot bath, remove the jars, and the work is done. Six months afterward, if this simple operation is properly performed, you are promised a store of butter as fresh and sweet as if direct from the churn. The theory is that the heating has driven to the bottom of the jars the caseine, whose chemical modifications affect the butter.

W. H. W. CAMPBELL, California.

New Chrysanthemums.—During the month ending November 9th, the greenhouse of Pitcher & Manda, Short Hills, N. J., presented the chrysanmum in its glory. Aware of the difficulties and expense of sending their plants to a public exhibition, the proprietors have preferred to invite their friends to inspect their treasures on their own grounds. A house of about 125x25 feet was completely filled with the choicest varieties of Chrysanthemums, and this sea of colors, tastefully and artistically arranged, presented a rare treat indeed. The entire center of the house was filled with thousands of blooming plants of Mrs. Alpheus Hardy, grown in perfection. All around the sides were staged the most noted novelties, prominent among which were their recent importations from Japan, the new "French Set," Dr. Walcott's collection, and many seedlings of remarkable beauty. While the chrysanthemum formed the principal attraction of the occasion, the orchid, palm, fern, and other plant houses, with their rich and unique collections, were no less interesting to the plant-lover. These private exhibitions are a move in the right direction, and we are glad to see them so auspiciously inaugurated.

AMERICAN AGRICULTURIST
FOUNDED IN 1842

DECEMBER, 1889.

Secretary Rusk's Plans.

This official's report, as elsewhere summarized, indicates that as an Executive Department the old Government Bureau of Agriculture has received a decidedly progressive impetus. Mr. Rusk seems to have grasped the idea as to what this Department ought to and should become. His administration already shows evidences of real executive ability and of an intelligent insight into the needs of American agriculture so far as a special Department of the Federal Government can minister to them.

Mr. Rusk is wisely impressed with the fact that at best the Department can be only an assistant to and co-operator with the farmers of the United States, rather than a panacea for their troubles. He seems to be fully alive to the most important factor of all in the elevation of our agriculture—that, as the AMERICAN AGRICULTURIST has so often said, self-help is the best help. The rash attempt to take the management of our farmers' institutes out of the control of the farmers and place this work in charge of the Federal Government, Secretary Rusk does not indorse. He takes the position of the AMERICAN AGRICULTURIST—that these well-named "Farmers' Colleges" will be the more useful the more closely they are allied with and stimulate a spirit of self-help among the working farmers of the country. The Department can be useful in furnishing its experts to address institutes, or in otherwise co-operating with the institute work, and a few thousand dollars may well be expended in this direction. But to establish the system under Department auspices, with an unwieldy and expensive corps of officials authorized to spend half a million dollars annually, as provided in the misconceived Spooner bill, would be a grave error.

The remarkable financial depression in our great live-stock industry receives cordial attention. So far as it is affected by contagious diseases and by inefficient inspection of our export animal products, Mr. Rusk is right in demanding means and authority adequate to grapple with the evil. It is a duty the AMERICAN AGRICULTURIST owes to the live-stock industry to recognize the efficient work of the Department of late years in this direction (granting that it has not been perfect or above criticism), and to earnestly advise that Congress approve Secretary Rusk's various excellent suggestions for the welfare of our live-stock interests. His plans commend themselves for their practical wisdom and application to the end in view.

A spirit of genuine sympathy with the working farmers and agricultural scientists of the country pervades Mr. Rusk's official report. A touch of partisan politics is apparent at the close of his report, but whatever his political aspirations, J. M. Rusk has apparently a deep-rooted desire to make the United States Department of Agriculture a powerful help to farming and to science, and a direct assistant to farmers everywhere in this broad land. So long as he adheres faithfully to this principle, Secretary Rusk will deserve and receive the hearty co-operation of all agriculturists.

Retrospect of the Fair Season.

Agricultural fairs were originally designed to benefit agriculturists. They afforded meeting-places where could be displayed the best products of the farm; where sales and exchanges could be effected; where contracts for labor could be made; new machinery examined and tested; opinions exchanged, and social intercourse among the farming community encouraged.

Now, while the letter of the design is yet adhered to, the spirit of it has almost wholly vanished. The exhibitors of fine stock are almost always special breeders, who have prepared animals especially for exhibition. They obtain the prizes, which thus become premiums paid them to come and advertise their own business. The farmer who has grown a fine animal in the ordinary course of his business has no inducement to bring it and exhibit in competition with a professional breeder. It is, of course, desirable that the finest specimens of the breeder should be exhibited, as object lessons. But the exhibitor who comes for the purpose of advertising his wares should be put upon the same basis as the exhibitor of machinery, or any other tradesman.

Prizes are offered for "best and largest" displays, biggest specimens, largest varieties, etc., of fruits, grains and vegetables. Of course the largest pumpkins and squashes must be shown, but the display is absolutely valueless except as showing what monstrosities nature may produce, while the prizes for fruit and vegetable displays may be taken by any one who will gather up the best assortment. These prizes should be open to competition only by *bona fide* growers, and, to be of value, the exhibits should be accompanied by statement of soil and conditions of cultivation; and prizes should especially be given for yields per given area. It is a fact, and one to be regretted, that many of our local and county fairs have degenerated into mere shows for the idle and the curious.

Nothing pertaining to our agriculture should be permitted to retrograde. The managers of fairs should offer inducements to farmers to become active participants in them instead of mere lookers-on. Now, while resting from their labors of the past season, and counting up the gains or losses, they should put on their "thinking-caps," to the end that next year the agricultural fairs may be more truly farmers' fairs than they have lately been.

Methods of Setting Milk.

There is an old adage about good workmen never complaining of their tools. This applies equally to the dairy work. A competent dairyman may make as good butter with shallow setting as by deep setting with ice, although, when a sufficient supply of ice is available, the deep pails are very convenient and are economical of space. As in most cases the trouble comes in at the dividing line between two different methods, and in the dairy where neither deep nor shallow setting of the milk seems to be preferable, and there are difficulties in the way of both, the use of the earthenware pots about eight or nine inches deep and as wide at the top, set in a trough of running spring water at a temperature of fifty-five degrees, will be found all that can be desired. It comes halfway between shallow setting at sixty-two degrees and deep setting at forty-five degrees and has the advantages of both; moreover, it is applicable to both summer and winter.

American Pomology.

The remarkable progress in American Pomology which has been made within the last two or three decades is in no small degree due to the efforts and work of the American Pomological Society. In no other branch of agriculture or horticulture has there been so thorough an organization for efficient work as in this, and in none have the results been more satisfactory. The biennial reports of the American Pomological Society contain an amount of accurate information not otherwise obtainable, and arouse the admiration of intelligent pomologists in all parts of the world. The report of the proceedings of the session of 1889, held at Ocala, Florida, which has just been published, is the largest, and in some respects the most noteworthy, yet issued.

Citrus, and other semi-tropical fruits, form naturally a prominent feature of the papers read and the discussion thereon. All these are incorporated in this report, forming most valuable contributions to our pomological literature. In conformity with the progressive spirit of the Society commercial topics were introduced for the first time, and the essays on the cause and remedy of gluts, marketing of fruits, honesty in packing, fruit exchanges, and similar topics will be read with interest. The work of reform in the nomenclature of fruits begun by the late president, M. P. Wilder, and vigorously continued by the present president, P. J. Berckmans, progresses satisfactorily. Already many complicated and pretentious names have been changed into something more in accord with good taste and modern science. The crowning work of the Society, however, is its fruit catalogue, which forms a part of this report and is revised and brought up to date at each session. All the best varieties of fruits are here concisely described, and alphabetically arranged in such a manner that the comparative value of any variety for each State in the Union and the Provinces of Canada can be ascertained at a glance.

No country or government in the world has ever attempted the publication of so comprehensive and extensive a work as this which is here accomplished by the combined efforts of the members of the American Pomological Society. It is gratifying to note that the Association of Agricultural Colleges and Experiment Stations and the American Florists' Society at their last meetings have appointed committees for the revision of objectionable names of vegetables and flowers, and for the establishment of general rules of nomenclature similar to those adopted by the American Pomological Society.

PRIZE CROP COMPETITION.

The Oat Prizes Awarded.

First Announcement of Prizes in the American Agriculturist Contest.

The American Agriculturist's Grand Prize of Five Hundred Dollars Goes to a Yield of Nearly One Hundred and Thirty-five Bushels of Cleaned Oats on the Measured One Acre. --- Other Big Crops. --- The Methods by Which These Yields Were Obtained.

At last we are able to announce the result in one of the four departments of the AMERICAN AGRICULTURIST Prize Crop Competition. It is of course known to all that in the January (1889) issue of this magazine we announced the offer by it of a prize of Five Hundred Dollars in Gold Coin for the largest yield on one measured acre of Oats grown in North America by subscribers to the AMERICAN AGRICULTURIST. A similar prize was offered for Wheat, Potatoes and Corn, and, with other prizes, swelled the total offered to nearly $10,000 in value. Contestants were given full liberty to employ any method they deemed most likely to produce maximum crops, provided only that our rules should be adhered to regulating the measurement of the land and of the crop, and in regard to explicit reports as to every detail in the culture pursued. That there should be no difficulty on this score, the "Book for Reports in the AMERICAN AGRICULTURIST Prize Crop Competition" was prepared for the use of each contestant. It contained blanks for sworn reports from the surveyors, harvesters, witnesses and contestants, and a complete schedule of questions, the answers to which in the space left under each for the purpose would give a very elaborate and detailed account of the system of culture from beginning to end.

Nothing of the Kind had ever before been undertaken on so large and comprehensive a scale. It attracted attention throughout the agricultural world, both at home and abroad. Thousands of farmers in all parts of the United States and Canada entered the lists. The competition in the Oat crop was very keen, but for one reason and another (mainly unfavorable weather or disasters of the season) a large number have failed to complete the undertaking and to send in complete reports. Many whose crops were partial or complete failures have sent in their reports of the culture pursued, with remarks as to the points learned by the experience. In many cases these fragmentary reports contain items that will prove of much value as we study the various plans adopted by different contestants. Thus, even if the crop failed, contestants have, in nearly every case, contributed experience of value. And it is knowledge that will benefit the farmers of America that is the object of this competition.

The Harvesting of the oat crop was most carefully done. The acre was, in each case, measured by a sworn surveyor, and his report was sworn to before a justice of the peace or notary public. Only the crop on this original and exact acre was harvested. If the acre was contiguous to other grain, a space of six feet or more all about it was cleared of all plants. The acre was then accurately measured by the three witnesses, and their measurement had to correspond with the surveyor's figures. A line was then run around the acre, and any straggling plants outside the line were removed. The crop was then bundled and shocked. The bundles were counted, and so arranged that they could not readily be tampered with. The same three witnesses were present at the thrashing, and the total weight of the cleaned grain only was taken. The witnesses had to swear to their report on the blanks furnished for the purpose in the Book for Reports, which blanks also contained this statement: "The contestant solemnly stated that the bundles thrashed were precisely the same as those we counted when the crop was cut, that they had in no way been molested, or touched, or added to, but that the above report covers only the yield from the grain grown on the exact acre harvested in our presence. We believe the contestant's statement, which he hereby swears to."

In Addition to all these safeguards, a disinterested and thoroughly honorable gentleman was present at nearly every harvesting, appointed by and acting as the official representative of the AMERICAN AGRICULTURIST. It was his duty to see that everything was faithfully done according to the rules, and that no deception or fraud was practiced. The report of this special representative has also been made direct to the Editor, and either confirms or questions the accuracy of the contestant's report. **We are gratified to state that in the oat crop contest our representatives in no case have doubted the honesty of the yield reported.** We feel, therefore, that every possible safeguard has been taken to insure the awarding of the prizes. The prizes are therefore awarded in the Oat contest as follows:

THE GRAND PRIZE.

	Yield per acre. In Lbs.	Bu. of 32 lbs. bu. lbs.
1. **$500 in Gold**—R. W. Strickland, Albion, Orleans Co., N. Y. (variety, White Bonanza)	4,311½	134-23½

THE OTHER PRIZES.

2. **Daniels's Plow Sulky**—B. F. Chestnut, Transfer, Mercer Co., Penn. (White Dutch)	3,312	103-16
3. **Nursery Stock, $33.75**—John Miller, Mongolia, York Co., Ontario (Vicks's American Banner)	3,100	96-28
4. **Porter Hay-Carrier, $20**—Joseph A. A. Bunot, Echo City, Summit Co., Utah (common)	3,091	96-19
5. **Selected Books, $15**—Edmund Hurlbut, Big Horn, Sheridan Co., Wyoming (White Bonanza)	2,893	90-13
6. **Knife-Grinder, $10** (*Also one ton of Bowker's Hill and Drill Phosphate $38, for the largest crop grown on Stockbridge fertilizer*), B. Gedney, White Plains, Westchester Co., N. Y. (white)	2,795	87-11

OTHER GOOD YIELDS AND SPECIAL PRIZES.

7. J. N. Muncey, Jesup, Buchanan Co., Iowa (White Schonen)	2,780	86-28
8. **$44**—(*One ton of Mapes Manure, valued at $44, for the largest crop grown on this manure exclusively*). Riley T. Scott, Yellowstone, La Fayette Co., Wisconsin (Scottish White)	2,660½	83-4½
9. Adolph Huene, Brownhelm Station, Lorain Co., Ohio (Potato)	2,640½	82-16½
10. William C. Cusick, Union, Union Co., Oregon (Henderson's Clydesdale)	2,617	81-25
11. Samuel Jacobs, Minesing, Simcoe Co., Ontario (Blockside)	2,451½	76-19½
12. Robert Stebbins, Kalamazoo, Kalamazoo Co., Michigan (White Swedish)	2,322	72-18
13. M. G. Shaver, Auburn, Cayuga Co., N. Y.	2,150	67-6
14. J. C. Miller, Baltimore, Fairfield Co., Ohio	2,222	69-14
15. John Ellison, McLeon, Tompkins Co., N. Y. (Welcome)	2,137	66-25
16. **$50 in Gold**—(*Largest yield of Wide Awake oats on seed bought of B. L. Bragg & Co., Springfield, Mass.*), William B. Smillie, Lindenville, Ashtabula Co., Ohio	1,975	61-23
17. Perry C. Annis, Frewsburg, Chautauqua Co., N. Y. (White Bonanza)	1,793½	56-1½
18. Oliver Sancomb, Ellenburg Center, Clinton Co., N. Y. (Canada)	1,765½	55-5½
19. R. G. H. Speed, Slaterville, Tompkins Co., N. Y. (Early Swedish)	1,482	46-10
20. J. R. Loy, Center, Perry Co., Pa. (White Wonder)	1,248½	39½
21. **$102**—(*Two tons of Quinnipiac Phosphate, valued at $72; for the largest yield on this fertilizer exclusively; also, $30 in gold for second largest crop of B. L. Bragg & Co's Wide Awake seed oats*), George N. Beals, Sunderland, Franklin Co., Mass.	1,170	36-20
22. Garret M. Banness, Pompton Plains, Morris Co., N. J.	1,155	36-3
23. **$20**—(*For the third largest crop of Wide Awake oats on B. L. Bragg & Co's seed*), Samuel S. Colkitt, Mt. Holly, Burlington Co., N. J.	1,043	32-19

HOW THE GRAND PRIZE CROP WAS GROWN.

The surveyor's sworn certificate showed that the acre, measured June 28, by J. R. Howard, was 528 feet long, and 82½ feet wide. The witnesses at the harvest swore that this identical acre was remeasured then, with the above result. The soil is a dark loam, with a clay subsoil. It is nearly flat, there being a slight depression crosswise through the center from south to north, leaving the ends about two feet higher than the center. This accounts in part for the extraordinary richness of this plat, as the depression has evidently served to catch and retain fertility washed into it from the surrounding fields. The plat is naturally well drained, and as the season was dry at the start, the moist section in the middle was a great advantage.

History of the Land.—For fifteen or sixteen years back the land has grown the rotation common to Orleans county farming—grass, corn or beans, and wheat, with one exception, three or four years back. It always yielded about one-third more than the other five acres in the same lot. Prior to and including 1884 it was always lightly covered with barnyard manure before each plowing. In 1884 or 1885 five loads of cornstalks that had been left out all winter were burned on this particular acre, including about 50 bushels of unshucked ears. In 1885 a heavy sod was plowed under and planted to white beans, but with no fertilizers except ashes; the yield was 29 bushels. In 1886 the lot (six acres) was sown to oats without any fertilizer or manure, and yielded 510 bushels; an average of 85 bushels per acre. This showed that the soil was peculiarly adapted to oats. In the fall of that year sixty loads of fairly-rotted stable manure was spread on the oat stubble on the six acres, and plowed under, wheat being sown. The crop was a failure in 1887, not producing five bushels per acre. Grass seed had been sown with the wheat, but it did not catch well, and the light sod was plowed the third week in June (1888) to the depth of six inches. It was very dry, but a rain coming soon, the soil was thoroughly fitted with a spring-tooth harrow, and planted to white beans, on June 27. The crop was hoed twice, and kept thoroughly worked with a Planet Jr. cultivator, and when harvested with a bean harvester (yielding twenty bushels per acre), the ground was left very level and mellow on the surface.

Manures.—It will be seen, therefore, that this acre was a naturally good soil; it had been quite well manured, and for the last three years the crops were so light as to draw very little on the stores of plant food in the soil. The soil being retentive, there was no loss of fertility by leaching. It had been kept under clean culture, so that annual crops of weeds had not exhausted it. The good culture and frequent stirring of the soil had also been beneficial in developing nitrification. Therefore, when the spring of 1889 arrived, the soil was well filled with manure (not forgetting the potash and phosphoric acid from the wood ashes and cornstalks ash, two specially important elements for oats) distributed through the soil in a thoroughly decomposed state, and in a condition to be readily taken up and assimilated by such a gross feeder as the oat crop. Mr. Strickland wisely concluded that to put more manure or fertilizer on land in this condition would be to stimulate growth of straw at the expense of grain. No further application of plant food was made.

Preparing the Soil.—With the land full of fertility, the great object was to so prepare it that the plants' roots could readily make their way through the soil and assimilate its elements as rapidly as possible. We find that it was plowed six inches deep, with a Wiard plow, on April 24 and 25, but not cross-plowed, as it never had been. As soon as plowed, Mr. Strickland went over it with a roller, but the soil was so wet that the rolling packed it down very hard. It was then harrowed lengthwise of the furrow with a spring-tooth harrow and a home-made chisel-tooth harrow. The latter was used because it was desired to keep both teams employed, but Mr. Strickland thinks the spring-tooth harrow the best tool made with which to fit land, and would not take $500 for his if he could not get another. It was then rolled with a large heavy roller, again harrowed (this time crossways), rolled, harrowed corner-ways, rolled, and harrowed corner-ways in the opposite direction. The weather was fair, and this repeated harrowing and rolling left the soil very fine and mellow—a perfect seed-bed except in one spot of about twenty square rods, where it was a little lumpy.

Seeding and After-Treatment.—Two and one-half bushels of White Bonanza oats were sown broadcast by hand on April 27, just as soon as the land was fitted, and before it could get dry or lumpy. The seed was obtained direct from John A. Salzer, a Wisconsin seedsman, and had never been grown in Orleans county before. The planting took about half a day, the seed being covered about two and a half inches deep by careful harrowing with a smoothing-harrow. It was not then rolled, as the soil was rather moist, but Mr. Strickland usually rolls after seeding when it is dry, and has always noticed a difference in favor of rolling when not too wet.

The crop was fairly up over the whole acre May 7, when the land was quite dry on the ends, but in about the right condition at the center. The season continuing rather dry, the field was rolled when the oats were four to six inches high. This

seemed to retain the soil moisture, and kept the crop in good shape until rain came. Nothing further was done to the crop until the harvest, but it was fortunate in escaping disaster of every kind, though the latter part of the season was too wet for the best effect.

Harvesting and Thrashing.—On August 7th Mr. Strickland cut the oats with a William Deering self-binder, the crop standing so straight that the job was completed in one hour. George Moore, A. S. Bennett and A. L. Briggs, all of Albion, were present as witnesses, and have sworn to the report as described in the first part of this article. A count of the bundles of grain when dropped from the binder showed the witnesses that there were 423 bundles on the exact and original one acre. Mr. Strickland writes: "On account of the oats being so very ripe when cut, to save shelling I screwed my binder down (in the presence of the witnesses) so that it put just two common bundles into one. I have cut over 200 acres with my binder this year, and know that these 423 bundles were as large again as any others I have cut this year. The bundles were carefully stacked in the field, and afterward drawn to the barn, the witnesses being present, and again counting the bundles. On September 9th the bundles were thrashed, and tallied 423 bundles at each count by the witnesses, who also satisfied themselves that the bundles had not been stuffed or tampered with. These oats were thrashed separately from all others, and were put into an empty granary, which was locked by the witnesses, and the key taken charge of by them. After the rest of the oats were thrashed, the witnesses unlocked the granary, cleaned the grain, and weighed it themselves, on scales whose accuracy they tested and found correct.

The Total Weight of the cleaned grain was *four thousand three hundred eleven and one-half* (4,311 1-2) *pounds.* At thirty-two pounds to the bushel — the standard weight which has been adopted throughout this contest—the crop was 134 *bushels and* 23½ *pounds, by weight.* One even or "struck" bushel weighed 37½ pounds, so that *by measure* the crop was 115 bushels. Of course, the yield in pounds per acre is the only fair way to measure. Consequently, the AMERICAN AGRICULTURIST awards its grand prize of $500 in gold coin to Ralph W. Strickland, of Albion, Orleans Co., N. Y.

The other reports received are equally interesting, and practical points from them will be presented in the next and succeeding issues of the AMERICAN AGRICULTURIST.

Financial Statement.—The account is favorable to the crop and to intensive culture, as stated below, but it seems fair to add at least fifteen dollars for the plant food taken out of the soil by the crop. The standard average of the composition of oats shows that this is a moderate estimate. Even on this basis, the expenses are only $34.15, while, at 32 cents per bushel, the crop is worth $43.12—a profit above fair wages for the work performed of about nine dollars. This is exclusive of straw, to which Mr. Strickland attaches no commercial value, because so abundant in his locality. He figures the cost as follows:

Interest on land for one year	$ 6.00
Plowing represented labor worth	1.50
Harrowing	1.50
Rolling and other preparation	1.20
Cost of seed	5.00
Harvesting	1.25
Drawing in crop	.90
Thrashing (agreed upon in advance)	1.80
Total expenses	$19.15

Peach-Leaf-Curl.—C. E. N., Nayatt, R. I.: The curling of the leaves of peach-trees in spring is due to an attack of a minute parasitic fungus called *Taphrina deformans.* But this fungus does not attack the leaves every year, but only when all the conditions are favorable, such as cool, wet weather at the time the leaves are unfolding. The trees on which the leaves curl are not usually diseased, but a slight check in growth invites the attacks of the fungus. Next season, if the weather is favorable to growth, when the buds swell the trees will not be affected with curl of the leaf.

Every Number Better than the Preceding One.—I have been a subscriber to the AMERICAN AGRICULTURIST most of the time since 1862—then a boy; have saved every number, and I use them frequently for reference. You can see how much I value it. I cannot get along without its monthly visits, as every number is better than the preceding one.

J. F. COURIER, Somerset Co., Me.

SCIENCE IN FARMING.

Phosphoric acid containing fertilizers gave the best results on wheat at the Virginia Station (Bulletin 1). Stable manure was less satisfactory than any of the forms of complete fertilizers. Potash gave the second largest, and nitrogen the least increase.

Hot-water heating of greenhouses has again proved superior to heating with steam at the test-houses of the Massachusetts (Hatch) Station (Bulletin 6). The heating surface exposed to the fire in the hot-water system was 74.5, but the average temperature was 2.3 degrees higher, and the amount of coal consumed 2,100 pounds less in two months than was the case with steam-boilers with 85 feet of heating surface.

The cleaning or screening of wheat is attracting considerable attention in the Northwest. "Farmers can, by a little preparation, clean their wheat for considerably less than one cent per bushel, and elevators, by using proper machines, can clean it for them for less than half a cent." Mr. Hays says truly (Minnesota, 8) that by the present improvements in cleaning mills there is no excuse for farmers wasting three or four pounds of screenings per bushel of average wheat through the system of dockage now in vogue.

Not the least important duties of the Stations in our Western States is to direct attention to the exhaustion of soil by agriculture as ordinarily pursued, and how to prevent it by the proper husbandry of manures and fertilizers. An intelligent effort in this direction appears in Bulletin 8 from Minnesota. While there is nothing original in this kind of work, it is of practical importance. The fact is significant that of 16,000 tons of oil cake made in Minnesota, only eight per cent is fed in that and neighboring States, and the balance is exported to England.

Corn ensilage and sorghum ensilage have no difference in feeding value for beef steers, according to the Iowa Station. Corn fodder proved a better coarse fodder with most animals than timothy hay or ensilage, but the hay was more profitable than ensilage. Corn-and-cob meal was the only grain fed. The addition of timothy to the ration of grain and ensilage added materially to the profit, but a varied ration—wheat bran, meal, corn fodder, hay, and either ensilage or mangolds—produced the cheapest gain of all. Shell-corn produced gain more cheaply than the same value in meal.

Root knot is very prevalent in the South, especially on the roots of large and small fruit trees and other plants. Prof. J. C. Neal's investigations (Bulletin 20 of the Division of Entomology, Department of Agriculture) show conclusively that it is due to the ravages of a minute Nematode worm. It can be introduced by planting infected trees, by the use of composts of muck and weeds from infected soils, etc. Remedial measures include drainage, freezing of the ground, burning over of land, supplying virgin land or subsoil about trees until firm roots are formed, the disuse of land for a year or two and keeping it clean, the disuse of easily-affected crops, or the use of vermicide fertilizers and of non-infected stocks.

PUBLICATIONS OF THE STATIONS.

ALABAMA—Exp. Sta. at Auburn, Bul. 6, July, 40 pp., 29 plates, grasses and their cultivation.

ARKANSAS—Exp. Sta. at Fayetteville, Bul. 10, June, 26 pp., entomological notes. Bul. 11, September, 12 pp., strawberries.

CALIFORNIA—Exp. Sta. at Berkeley, Bul. 82, June, 4 pp., the lakes of the San Joaquin Valley; Bulletin, 58 pp., reports of examinations of waters, water supply, etc., during 1886 to 1889.

COLORADO—Exp. Sta. at Fort Collins, Bul. 7, 24 pp., potatoes and sugar-beets; Bul. 8, July, 24 pp., alfalfa.

CONNECTICUT—Exp. Sta. at New Haven, Bul. 98, June, 8 pp., home-mixed fertilizers; Bul. 99, 6 pp., fertilizer analyses. Exp. Sta. at Storrs, Bul. 4, July, 10 pp., bacteria in milk and its products.

DELAWARE—Exp. Sta. at Newark, Bul. 5, June, 32 pages, seed testing.

GEORGIA—Monthly crop reports.

FLORIDA—Exp. Sta. at Lake City, bulletin of 18 pp. on water analyses.

ILLINOIS—Exp. Sta. at Champaign, Bul. 6, August, 12 pp., a bacterial disease of corn.

INDIANA—Exp. Sta. at Lafayette, Bul. 25, June, 18 pp., experiments in rearing the plum curculio; Bul. 26, July, 20 pp., wheat rust; Bul. 27, August, 12 pp., field experiments with wheat; Bul. 28, September, 24 pp., smut of wheat and oats.

IOWA—Exp. Sta. at Ames, Bul. 6, August, 44 pp., experiment station wheat and oats in 1889, feeding experiments, food habits of the striped prairie-squirrel.

KENTUCKY—Exp. Sta. at Lexington, Bul. 19, May, 20 pp., experiments in pig-feeding; Bul. 20, July, 20 pp., commercial fertilizers; Bul. 21, September, 22 pp., the grain louse.

KANSAS—Exp. Sta. at Manhattan, Bul. 6, June, 16 pp., silos and silage; Bul. 7, July, 16 pp., experiments with wheat. State Board of Agriculture crop and weather report for June and July. Fruit-crop report for July 1, 1889, 14 pp. Report of the board of agriculture for August and September, 60 pp.; M. Mohler, secretary.

LOUISIANA—Bureau of agriculture, monthly crop reports, embracing also notes from the several experiment stations.

MARYLAND—Exp. Sta. at Agricultural College, Bul. 4, March, 8 pp., experiment orchard; Bul. 5, 18 pp., experiment orchard.

MASSACHUSETTS—State Board of Agriculture, monthly crop reports. State Exp. Sta. at Amherst, bulletin of 4 pp., July, analyses of commercial fertilizers; same for August and September. Hatch Exp. Sta. at Amherst, Bul. 7, meteorological report; Bul. 6, October, 20 pp., steam vs. hot water in greenhouse heating.

MICHIGAN—Exp. Sta. at Agricultural College, Bul. 50, June, 6 pp., the grain plant louse; Bul. 51, July, 8 pp., beneficial insects; Bul. 52, July, 8 pp., commercial fertilizers; Bul. 53, August, 8 pp., spraying with the arsenites.

MINNESOTA—Exp. Sta. at St. Anthony Park, Bul. 8, July, 36 pp., 3 plates, siloing clover, sources of home-made manures, the by-products of wheat, the Rocky Mountain locusts in Otter Tail county in 1889.

MISSISSIPPI—Exp. Sta. at Agricultural College, Bul. 7, 12 pp., hay presses; Bul. 8, August, 10 pp., silos; Bul. 9, August, 14 pp., poison sneeze weed in sheep and calves; Bul. 10, October, 10 pp., 4 illus., dehorning.

MISSOURI—Thirty-first annual report of the Horticultural Society, 502 pp. Exp. Sta. at Columbia, Bul. 7, 20 pp., experiments on green vs. dry storage of fodder; Bul. 8, 24 pp., experiments on feeding ensilage vs. dry fodder.

NEW JERSEY—Exp. Sta. at New Brunswick, Bul. 56, 16 pp., analyses and valuation of complete fertilizers; Bul. 57, 8 pp., experiments with different breeds of dairy cows; Bul. 58, 12 pp., analyses of incomplete fertilizers; special bulletin F, July, 4 pp., the horn-fly; G, the potato-rot.

NEVADA—Exp. Sta. at Reno, Bul. 5, June, 14 pp., meteorological report.

NEW YORK—Exp. Sta. at Ithaca, Bul. 7, July, 40 pp., on the influence of certain conditions upon the sprouting of seeds; Bul. 8, August, 16 pp., the effect of different rations on fattening lambs; Bul. 9, September, a study of windbreaks in their relations to fruit-growing. Annual report State Dairyman's Association for 1888, 74 pp. Sorghum as a source of sugar, 26 pp., by Peter Collier, of the Geneva Exp. Sta. Fifth annual report of the State dairy commissioner, 720 pp.; J. K. Brown, commissioner.

NORTH CAROLINA—Exp. Sta. at Raleigh, Bul. 63, June, 16 pp., tests of seeds, with special reference to the vitality of old seed, rust on wheat and cotton, laboratory notes on stable manure, additional analyses of commercial fertilizers. Bul. 64, July, 20 pp., practical stock-feeding on scientific principles, together with its relations to chemistry.

NOVA SCOTIA—Department of Agriculture at Halifax, government crop report for July, 56 pp.; George Lawson, secretary.

OHIO—Exp. Sta. at Columbus, annual report for 1888, 216 pp.; Bul. 9, April and May, colic of horses; Bul. 10, June, 28 pp., silos and ensilage, ensilage vs. field beets as food for cows; Bul. 11, July, 14 pp., experiments with small fruits in 1889, effect of early and late picking upon the keeping quality of apples; Bul. 12, August, 18 pp., experiments in wheat seeding, comparative test of varieties of wheat; Bul. 13, September, 38 pp., remedies for the plum curculio and the striped cucumber beetle, strawberry root-louse and grain plant-louse, notes on little-known injurious insects, preventing the injuries of potato rot.

ONTARIO—Bureau of industries at Toronto, Bul. 27, crops and live stock in Ontario; Bul. 28, same. Annual report for 1888, 172 pp.; A. Blue, secretary, Toronto. Department of agriculture at Guelph, Bul. 45, September, 8 pp., Ontario oats; Bul. 46, October, 8 pp., chess; Bul. 47, October, 8 pp., notes for cheese-makers for October.

PENNSYLVANIA—Exp. Sta. at State College, Bul. 8, July, 8 pp., germination tests.

QUEENSLAND, AUSTRALIA—Annual report of the department of agriculture, 55 pp., with an appendix of 25 pp. on viticulture and wine-making in the colony; Peter McLean, under-secretary.

RHODE ISLAND—State Board of Agriculture report of lectures and discussions, 152 pp. Exp. Sta. at Kingston, Bul. 1, March, 12 pp., organization.

SOUTH CAROLINA—Department of agriculture monthly crop reports. Exp. Sta. at Columbia, Bul. 6, July, 12 pp., hog cholera.

TENNESSEE—Exp. Sta. at Knoxville, Bul. 3, July, 12 pp., cottonseed hulls and meal as food for live stock.

TEXAS—Exp. Sta. at College Station, Bul. 6, June, 40 pp., feeding experiment.

UNITED STATES DEPARTMENT OF AGRICULTURE at Washington, D. C.—First report of the Secretary, 40 pp.

Statistical Division—Crop reports for July to November, inclusive.

Entomological Division—No. 3, vol. 2, of *Insect Life*; the root-knot disease of the peach, orange, and other plants in Florida, 28 pp., 21 plates.

Experiment Station Division—Bul. 3, July, 12 pp., report of horticulturists' meeting at Columbus, O., June, 1889. Farmers' bulletin No. 1, June, 16 pp., the what and why of agricultural experiment stations; miscellaneous bulletin No. 1, March, 118 pp., proceedings of the second annual convention of the association of American Agricultural colleges and experiment stations held at Knoxville, Tenn. Circular No. 7, March, 40 pp., co-operative field experiments with fertilizers. Circular No. 12, July, regarding the library and publications of the office. Bul. 2, June, 258 pp., digest of the annual reports of the experiment stations in the United States for 1888.

Division of Chemistry—Report of experiments in the manufacture of sugar by diffusion, at Magnolia station, Lawrence, La.; record of experiments at the sugar exp. sta. on Calumet Plantation; record of experiments at Des Lignes sugar exp. sta. at Baldwin, La.; food and food adulterants, by Dr. H. W. Wiley, chief chemist.

Bureau of Animal Industry—Report of the United States board of inquiry concerning epizootic diseases among swine.

Section of Vegetable Pathology—Bul. 8, July, 12 pp., experiments in the treatment of pear-leaf blight and the apple powdery mildew.

VERMONT—Exp. Sta. at Burlington, Bul. 15, June, 20 pp., analysis of hay; Bul. 16, July, 8 pp., testing milk at creameries.

VIRGINIA—Exp. Sta. at Blacksburg; Bul. 1 (new series), 20 pp., application of fertilizers to wheat; Bul. 2, October, 16 pp., experiment orchard and small fruits.

WISCONSIN—Exp. Sta. at Madison, Bul. 20, July, 30 pp., noxious weeds of Wisconsin; Bul. 21, October, 30 pp., comparative value of warm and cold water for milch cows in winter.

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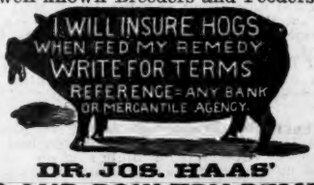


DR. JOS. HAAS'

HOG AND POULTRY REMEDY

USED SUCCESSFULLY 14 YEARS.

PREVENTS DISEASE, STOPS COUGH, INCREASES FLESH, | ARRESTS DISEASE, EXPELS WORMS, HASTENS MATURITY.

PRICES: 25 lb. cans, $12.50; $2.50, $1.25 and 50c. a package. Largest are cheapest.

Orders by mail receive prompt attention. Write for circular. Send 2 ct. stamp for "Hogology," a 64 page pamphlet on swine. Mention this paper. JOS. HAAS, V.S., INDIANAPOLIS, IND

FOR CHRISTMAS:

A Black Silk Dress.

Black Silk, to wear well and be of fine appearance, should be made of Silk inside and out. Many Silks appear well, but wear poorly, because the warp, or outside thread, is silk, while the filling, or inside thread, is of baser material.

We have a stock of Black Silks containing 250 varieties of Plain Blacks and over 200 Fancy Blacks; the prices range from 75 cents to $10 per yard. From this stock you may, with confidence, select a dress pattern; every piece is Silk through and through. Samples sent on request.

James McCreery & Co.,

Broadway and 11th St., New York.

DO YOU WANT A GOLD WATCH? CO-OPERATION REDUCES COST Write to the KEYSTONE WATCH CLUB CO., 904 Walnut Street, Philada., for full particulars of their plan.

EVERY LADY WANTS A SILK DRESS.

This is your opportunity. **A new departure.** SILKS direct from the manufacturers to **you.**

Our reduced prices bring the best goods within reach of all.

We are the only manufacturers in the U. S. selling **direct to consumers.** You take no risk. We warrant every piece of goods as represented, or money refunded. See our references. We are the oldest Silk Manufacturers in the U. S. Established in 1838, with over 50 years' experience.

We guarantee the

CHAFFEE DRESS SILKS,

for richness of color, superior finish and wearing qualities, to be **unexcelled by any make of Black Silks in the world.** We offer these Dress Silks in Gros Grains, Satins, Surahs, Faille Francaise and Aida Cloths, in Blacks only.

Send us a 2c.-stamp (to pay postage) and we will forward you samples of all our styles free with prices, and you can see for yourselves.

O. S. CHAFFEE & SON,
Mansfield Centre, Conn.

Refer, by permission, to First National Bank, Windham National Bank, Dime Savings Bank, Willimantic Savings Institute, of Willimantic, Conn.

RECOLLECT we send to all parts of the U. S. With each Dress Pattern we present the buyer with **1000** Yards Sewing Silk, and enough Silk Braid to bind bottom of dress.

THE GOODS are delivered to you all CARRYING charges **PREPAID**

JONES HE **PAYS the FREIGHT**

5 Ton Wagon Scales, Iron Levers, Steel Bearings, Brass Tare Beam and Beam Box for

$60.

Every size Scale. For free price list mention this paper and address

JONES OF BINGHAMTON, BINGHAMTON, N. Y.

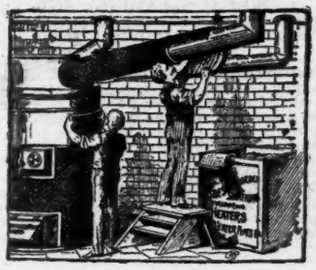
Established JACKSON BROTHERS, 1852.

New York State Drain-Tile and Pipe Works,

MAIN OFFICE, 88 Third Ave., ALBANY, N. Y.

ROUND, SOLE AND HORSE-SHOE TILE.

Over 13 Inches Long. By Cargo or Smallest Quantity. Price List on Application. Prices that cannot be undersold. Our new improved Machinery makes a Superior Round Tile, excelling anything offered before and at greatly reduced prices. First premium wherever exhibited. Also, wholesale agents for the celebrated Akron Salt-Glazed Sewer-Pipe. Prices low for small or large orders.



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FIRE-PROOF, NON-CONDUCTING

COVERINGS.

FOR FURNACES, HOT-AIR PIPES, ETC.

33 PER CENT. OF FUEL SAVED.

DESCRIPTIVE PRICE LIST, FREE BY MAIL.

H. W. JOHNS MANUFACTURING CO,
SOLE MANUFACTURERS.

ASBESTOS ROOFING, BUILDING FELT, ETC.
SECTIONAL PIPE & BOILER COVERINGS, STEAM PACKINGS, ETC.
LIQUID PAINTS, FIRE-PROOF PAINTS, COATINGS, ETC.

87 MAIDEN LANE, NEW YORK.

CHICAGO. PHILADELPHIA. LONDON.

MATTERS OF BUSINESS.

A New Triumph.—One of the grand prizes, a gold medal of honor, of the recent Paris Exposition, was won by the Gillott steel pens, which have been so long and so well known all over the world.

A Salary, with expenses paid, will come handy to any one who is now out of employment, especially where no previous experience is required to get the position. If you want a position, see advertisement on page 663, "A Chance to Make Money."

Poultry for Profit.—Mr. A. F. Hunter, who conducts a small but very profitable poultry-farm near Boston, and is quite well known as a writer on poultry matters, has assumed the editorship of a new poultry journal. It is entitled "Farm Poultry," and is published by I. S. Johnson & Co., 22 Custom-House street, Boston, Mass. Monthly, fifty cents a year. Sample copy, five cents.

Good Grapes.—Fredonia, N. Y., is in the great Chautauqua grape region, and Mr. Lewis Roesch, of that village, has over a hundred varieties of grape vines in stock. He reports that his orders for vines are already fifty per cent ahead of last season. He always guarantees to buyers that every vine shall be as represented, and sends sample vines at a merely nominal price.

Good for Poultry.—Raw bones and oyster shells supply the materials of which the shells and some of the most important elements of hens' eggs are composed. For the use of poultry-keepers, E. S. Fitch, of Bay City, Mich., prepares raw bone and shells coarsely ground, which he sells in lots of one hundred pounds or more, freight prepaid to the railway station of the buyer. Write to him, as above, for prices and circular.

A Silk Dress.—Every lady who contemplates buying a black silk dress should send a two-cent stamp to O. S. Chaffee & Son, Mansfield Center, Conn., and receive samples, free, of black grosgrains, satins, surahs, faille Francaise, and Aida cloths. From these samples any goods selected are sold direct from the manufacturers, with charges prepaid, and each dress pattern accompanied by enough free sewing silk and braid to make it up.

Keep Your Horse Comfortable.—The man who will leave a horse standing unblanketed, in a cold wind or storm should be made to stand there himself, in his shirt-sleeves, until he could see how it is himself. While buying a blanket, get a good one, like the 5-A blankets. They are the strongest blankets made; are comfortable and economical. Four styles of these are named in their advertisement, and there are besides thirty styles of 5-A blankets made.

Portable Mills.—The Portable Grist and Feed Mills made by Charles Kaestner & Co., 303 South Canal street, Chicago, are made with buhr millstones, and, being vertical, possess many advantages over the old horizontal style. Their capacity is greater, they cool more quickly, require less power, and grind more evenly. Over 6000 of these mills are in successful operation, giving perfect satisfaction to all. Send for one of the new annual catalogues, which are sent free.

The Improved Excelsior Incubator.—The spontaneous testimony of hundreds who have used the Improved Excelsior Incubator is in its favor. The incubator is automatic in its workings, so simple of construction and management that it cannot fail. With reasonably good care it is invariably successful. An enthusiastic Kentuckian writes that "it beats the old hen, by a long way." In the hands of persons wholly inexperienced in the management of incubators, it hatches seventy-five to eighty per cent of the fertile eggs. The Improved Excelsior Incubator is made and sold by George H. Stahl, Quincy, Ill., who will furnish prices and circulars upon application.

Music in the House.—The improved method of fastening the strings of pianos, invented by the Mason & Hamlin Organ and Piano Company in the year 1882, is unquestionably one of the most important improvements ever made, making the instrument more richly musical in its tones, as well as more durable, and much less liable to get out of tune. Both the Mason & Hamlin organs and pianos excel chiefly in that which is the chief excellence in any musical instrument, *quality of tone.* Illustrated catalogues, containing descriptions of new and popular styles of organs and pianos, introduced this season, will be sent free to any one addressing the company, Boston, New York, or Chicago.

This Year's Crops.—Secretary Rusk says, in his annual report, that corn had a larger area than ever before, and the crop, slightly more than twenty-six bushels per acre, represents three-fourths of the world's production of maize. He places the increased home demand for wheat since 1880 at 70,000,000 bushels, due to increase of population, while there has been a decline in the foreign demand by 65,000,000 bushels, owing to the enlarged area devoted to wheat in Russia and India. The present crop is pronounced a full average, sufficient for all probable European demands, "though deficient yields elsewhere should tend to sustain, if not to advance, prices." The cotton crop is nearly 7,000,000 bales, for the first time since 1884. Cotton production has nearly doubled in the United States within thirty years, and there is no immediate prospect of the loss of our supremacy in cotton-growing. Increased attention is paid to forage and hay in the South.

Triumphs for Lakeside.—The Lakeside cattle and horses of Smiths, Powell & Lamb won an extraordinary number of premiums at every fair, last fall, in which they competed. At the New York State Fair, Albany, the animals from Lakeside took all the first and all the second premiums for Holstein-Friesians, except on two-year-old butls, in which they did not compete, but the first was won by a bull bred there. The sweepstake prize, and a special prize of $100 for best herd of Holstein-Friesians exhibited, were also awarded to Smiths, Powell & Lamb. They also distinguished themselves in Clydesdale horses, taking ten first and second and grand sweepstake in that class, second on Percherons, sweepstake and six first and second on French coach-horses. At the International, Buffalo, the Bay State, Boston, the State Fairs of Rhode Island, Wisconsin and Illinois, and several other exhibitions, they exhibited with like success.

The Fertilizer Trade has been quite good this year in the South, where it has reached large dimensions. Goods of a higher grade are demanded, as the practice of making low grade mixtures at home is increasing. A good cotton crop will enable planters to effect prompt settlements. The failure of potatoes in the New England and Middle States has had an unfavorable effect on the business in these sections. This is being met in some instances by co-operation to effect economies in manufacture and distribution. Thus, the Bradley Fertilizer Company, Pacific Guano Company, and Standard Fertilizer Company, Boston, Mass.; Williams & Clark Company, New York; Quinnipiac Company, New London, Conn., and Cleveland Dryer Company, Cleveland, Ohio, are intimately associated, the owners of the first-named corporation (perhaps the most successful in a large way of the whole fertilizer trade) being financially interested in the others, though all are ostensibly under different management. The call for goods of high quality is much stronger and of longer standing here than at the South, and is favored by the laws relative to fertilizer inspection.

A Center for Distributing Southern Fruits.—Truck and fruit culture is assuming large proportions in Mississippi. Its principal impediment is the difficulty of marketing the produce to advantage. The Growers' Shipping Association at Crystal Springs has partially remedied the difficulty. Now they and others are making an effort to establish a distributing exchange at Cairo, Ill. At this great railroad center it is proposed to establish an agent who shall keep thoroughly posted as to the supply and demand for Southern fruits and truck at all markets, and distribute the shipments of such produce among these markets, according to his best judgment. It is proposed to give this agent absolute authority over all shipments, even to the extent of holding back refrigerator cars in the event of a glut, re-icing them at Cairo, and forwarding when there is a favorable turn in the market. This is held to be wiser and cheaper than to send the produce to a glutted market and have the heavy expenses of metropolitan cold storage added to low prices. It is also believed that many buyers will go to Cairo to select such goods as they want, so that gradually selling by auction can be practiced. The plan appears to be feasible, and the AMERICAN AGRICULTURIST commends it to the attention of our Southern readers, who must grow less cotton and more of other crops.

Revolutionizing the Cotton Harvest.—A wonderful piece of mechanism was tested on August 13th, at Tuscaloosa, Ala., that may greatly advance the cotton manufacturing of the world, and be a special benefit to the cotton-growing country. It is known as the Allen New Process, and prepares cotton for spinning from the seed bolls. It is proposed to set these machines up throughout the cotton-growing districts, for manufacturing cotton yarns, which may be shipped to central points, where they will be woven directly into various goods used at home and abroad. The machine occupies a space five by ten feet, and combines principles to produce results never before attempted in the same way. The apparatus takes the cotton as picked, separates the lint from the seed, and immediately forms it into rolls ready for spinning. It prepares Sea Island or Upland cotton, coarse or fine, dispensing with the use of the cotton-gin, press, the compress, bagging, and for low numbers of yarn does away with the opener and lapper, the evener and cards. If the machine proves to be what is claimed for it, it will, undoubtedly, greatly reduce the cost of production. It was exhibited at the Alabama State Fair at Birmingham in October, and will probably prove one of the great drawing features of the exhibition.

An Event in Journalism.—The New York *Ledger* has changed its form from eight to sixteen pages. In its old form, the *Ledger* has, for more than a generation, been a welcome weekly visitor, carrying a pure and wholesome literature to unnumbered thousands of readers. But there has long been an urgent demand for a change in form which should make the *Ledger* convenient for binding, and it is in deference to this that the change has been made. In making it, the publishers seized the opportunity to introduce important improvements and add many new and costly features. The following is the table of contents of the first issue in the new form: "The Forsaken Inn" (first installment), illustrated; Anna Katharine Green. "Nihilism in Russia" (number one); Leo Hartmann, Nihilist. "Old Fashioned Fashions;" James Parton. "Dr. Hoknagel's Strange Story;" illustrated; Julian Hawthorne. "A Missionary's Life in the Wild North Land" (number one); illustrated; Rev. E. R. Young. "A Scientist's Bright Thoughts, Editorials, etc.;" "The New South" (first article): Hon. Henry W. Grady. "American Cookery" (number one); Miss Maria Parloa. "The Lady of the Rock" (a poem); illustrated; Thomas Dunn English. "An Original Temptation;" illustrated (concluded next week); the Marquise Clara Lanza. "Paying the Penalty" (seventh installment), illustrated; Major Alfred R. Calhoun. Correspondence, Science, Wit and Humor.

Milk Producers' Organizing.—Since the publication in the AMERICAN AGRICULTURIST for November of a full presentation of the New York milk trade, the farmers interested in this business have done much to complete their organization. The object is to form a local club of the farmers at every milk-shipping station on the different railroads, delegates from which shall constitute the central body of the New York Milk Producers' Union. These delegates are to vote according to the amount of milk they represent. An important conference and mass meeting was held at Middletown, Orange county, October 23d and 24th, to consider the situation, and the organizing of local branches has been going rapidly on since then. After the union is completed, the farmers propose to organize a milk company with a capital of $500,000 to take the place of the Milk Exchange, Limited, and supply the wholesale milk trade. The stock of this company will be divided in shares of twenty-five dollars each, farmers to take one share for each can of milk (forty quarts) that they furnish. The company proposes to utilize the surplus milk and cream at local factories, and also at a large creamery on the west and another on the north side of the metropolis. The undertaking is in competent hands, and when the union holds its annual meeting in February, there will be present delegates from almost every part of the five States from which this market draws its supply.

Silks For Farmers' Wives.

There was a time when silk dresses were considered extravagant, and at present prices of silks at retail comparatively few farmers' wives can afford to enjoy silk dresses. But at the prices placed upon fine fabrics by O. S. Chaffee & Son, of Mansfield Center, Ct., it seems as if every farmer in the land could afford to buy his wife at least one silk dress annually. Messrs. Chaffee are carrying on a business originated in 1838, and for many years have sold direct to those who wear the silks instead of disposing of their products at wholesale and allowing two or three profits to be made upon them by middlemen. Whether this system of doing business has been a success or not we leave the reader to judge from the following statements. The firm has a good name for straightforward dealing, and where their silks have gone more follow. Only black silks are produced. The business has had a great growth. At first it was carried on in a small way, as silk manufacturing early in the century was a primitive industry. At present a gigantic factory and warehouse furnish none too much room for the increasing trade. In 1861 the large silk mill belonging to this firm was totally destroyed by fire, but it was at once rebuilt and additional buildings erected in 1872, with a further addition of another large mill in 1887. Messrs. Chaffee have the confidence of the public to produce good silks, sell at low figures, and, in addition, generously give to every buyer of eighteen yards or more of silk, sufficient silk braid to bind the bottom of the dress and 1000 yards of the best sewing silk. If the integrity of the concern is questioned a single dollar forwarded to them with an order for a dress to be examined before buying will secure you against fraud. The goods can be returned if not liked, provided you state that you saw their advertisement in the AMERICAN AGRICULTURIST. Buyers of these silks are United States senators, army officers, farmers, bankers, brokers and manufacturers. Everybody is invited to visit the mills and make selections for himself. At present, sales are being made at a 10 per cent reduction below manufacturers' prices, and samples will be forwarded for comparison with other goods and to convince buyers of their value. When an order is given the proper way is to inclose one-half of the sample which you wish to duplicate. On the arrival of the goods they must correspond with the portion of the sample which the buyer retains. We are confident that those who favor Messrs. Chaffee with their orders will be proud of their bargains and recommend the firm to their neighbors.

WELLS, RICHARDSON & CO'S
IMPROVED
Butter Color.
EXCELS IN { STRENGTH / PURITY / BRIGHTNESS

Always gives a bright natural color, never turns rancid. Will not color the Buttermilk. Used by thousands of the best Creameries and Dairies. Do not allow your dealer to convince you that some other kind is just as good. Tell him the BEST is what you want, and you must have Wells, Richardson & Co's IMPROVED BUTTER COLOR. For sale everywhere. Manufactory, Burlington, Vt.

BABY PORTRAITS.

A Portfolio of beautiful baby pictures from life, printed on fine plate paper by patent photo process, sent free to Mother of any Baby born within a year. Every Mother wants these pictures; send at once. Give Baby's name and age.
WELLS, RICHARDSON & CO.,
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Reversible Steel PRESSES.

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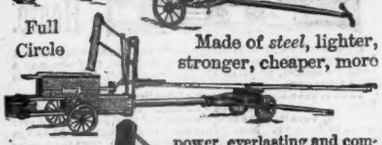

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power, everlasting and competition distanced. For proof, order on trial, to keep the best and get any other alongside if you can.

Address for circulars and location of Western and Southern Storehouses and Agents.

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DEDERICK & CO.,
No. 31 Dederick's Works, ALBANY, N. Y.

THE EDWARD HARRISON MILL CO.,

Manufacturers of

Harrison's Standard Burr Stone Grinding and Flouring Mills of all sizes and varieties, possessing great capacity and durability. Mills sent on trial to responsible parties. Low Prices. Write for New Illustrated Catalogue and mention this paper.
The Edward Harrison Mill Co.,
New Haven, Conn.

FARMERS! $ SAVED!

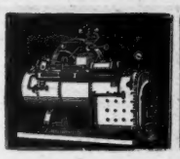
A Perfect Spring Wagon for $5.00. 3 in. high, perfectly graduating. Price per 2-ton set delivered $5.00. Agents Wanted. Write us.

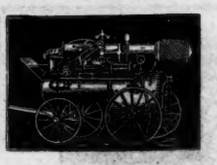
THE WOLCOTT HEAT-TRAP DOUBLES the VALUE of FUEL.

Send for Illustrated Catalogue.

GEO. E. HARRIS, Genl. Agt.,
108 Lake St., CHICAGO, Ill.

THE GREAT ENGLISH REMEDY.
Beecham's Pills
For Bilious and Nervous Disorders.
"Worth a Guinea a Box"—but sold
for 25 cents,
BY ALL DRUGGISTS.





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Catalogues and Prices sent on application.

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SELF-ADJUSTING SWING STANCHION!
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PETER HENDERSON & WM. CROZIER,
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Send your address immediately, on postal card, for our 80-page elegantly Illustrated Catalogue, describing more than 300 of our Works pertaining to Rural Life.
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and shall be pleased to quote prices and send catalogue.
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SHINGLES.
Cooper's Broad Rib Roofing,

Made from Tin and Steel Plate. For public and private buildings, barns and outhouses. Absolutely rain, storm and fire proof, easily applied, artistic in finish, without any exceptions the BEST IN THE WORLD; catalogues free. Address NATIONAL SHEET METAL ROOFING CO., 509 East 20th St., New York City. Mention this paper.

SEDGWICK WOVEN STEEL WIRE FENCE AND GATES.

Best Fences and Gates for all purposes. Free Catalogues, giving full particulars and prices. Ask Hardware Dealers, or address, mentioning this paper.
SEDGWICK BROS., RICHMOND, IND.

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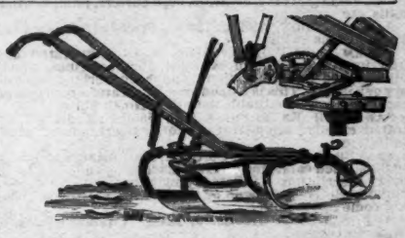
Best Roof in the World. Suitable for all classes of buildings. Easy put on.

All my Iron and Steel is re-rolled and box annealed, well painted on both sides with the Best of Paint and Pure Linseed Oil.

SYKES IRON ROOFING CO., NILES, OHIO.
Send for Circular and Price List, and mention this paper

THE "PLANET JR."



HORSE HOE has a world-wide fame, and its hosts of friends will be delighted with its improvements for 1890. First

LEVER EXPANDERS. Instantaneous in action, firm, strong, simple, accurate, perfect.

HANDLE ADJUSTMENT. Sidewise and for height; quick, stiff; grand for Grapes, Corn, and in covering.

PARALLEL FRAME. Standards interchangeable, strong, neat, convenient, inimitable.

We absolutely guarantee our 1890 Horse Hoe and Combinations and new patented features to please every practical farmer and gardener, and the money value to be far greater than ever. Look over it and write us. Catalogue free.

The "Planet Jr." Hand Seed Drills, Double and Single Wheel Hoes, Fire-Fly Plow, etc., are indispensable to Farmers and Gardeners. They sow with regularity any thickness and depth, difficult and easy seeds, in small or large quantity, and without danger to vitality, and without special care. In Market Gardening the Wheel Hoes save their cost every few days. The Fire-Fly Garden Plow is a delight in the family vegetable garden. The "Planet Jr." Combined Seed Drill, Wheel Hoes, Cultivators and Plow combines in an admirable way the qualities of all the rest; being delightful as a Seed Drill, Double-Wheel Hoe while plants are small, Single-Wheel Hoe, Cultivator deep or shallow, and Garden Plow. All the blades of these famous hand tools have long been made of hardened, polished steel. Keep them bright and sharp, and you will save the full cost every few days. Send for full descriptive catalogue of all our goods. Write us your wants.

S. L. ALLEN & CO., Sole Man'f'rs, 1107 Market St., Philadelphia, Pa.

Catalogues Acknowledged.

NURSERYMEN, SEEDSMEN, ETC.

JOSEPH H. BLACK & SON, successors to Charles Black & Co., Hightstown, N. J.: Descriptive catalogue of fruit trees and ornamental stock; small fruits; June budded peach trees; the Botan plum a specialty.

JOSEPH BRECK & SONS, Boston, Mass.: Catalogue of Dutch bulbs, lilies, amaryllis, and other flowering bulbs. A large and carefully-selected list.

R. DOUGLAS & SONS, Waukegan, Ill.: Wholesale catalogue of evergreen and deciduous trees for ornamental and forest planting. This firm claims to have the largest stock of evergreens grown from seed in America, and we have no doubt of its being true.

PETER HENDERSON & CO., New York city, N. Y.: Autumn catalogue of bulbs, plants and seeds for fall sowing, with colored cover illustrating some of the hyacinths, amaryllis, cyclamen, and other flowers. In addition, it contains a very complete list of the most desirable varieties, many illustrations, and cultural directions for each class here described.

IDAHO PEAR CO., Lewiston, Idaho: Descriptive and illustrated catalogue of the Idaho pear, giving numerous quotations from periodicals and pomologists from many sections of the United States and foreign countries testifying to the good qualities of this new pear. We are glad to see this excellent fruit introduced into the market to give fruit-growers everywhere an opportunity to give it a trial.

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J. T. LOVETT, Little Silver, N. J.: Illustrated and descriptive catalogue of small-fruit plants, fruit and ornamental trees, shrubs, hardy herbaceous plants, etc. Nut trees and oriental plums a specialty. One of the most complete lists of the season.

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WILLIAM PERRY, Perry, N. J.: Catalogue of small fruits, fruit and ornamental trees, shrubs, etc. Colored plate of the wonderful peach—which is made a specialty.

LAKE SHORE NURSERIES, L. W. Carr, manager, Erie, Pa.: Trade list of fruit and ornamental trees, grape-vines, currants, gooseberries, raspberries, and other small fruits.

TAYLOR BROS., Omaha, Neb.: Wholesale price-list of fruit trees, small fruits, grape-vines, root grafts, ornamental trees and shrubs, etc.

VAN B. WISKER, Osceola, M.: Circular of the new strawberry Osceola, claimed to be the earliest market-berry.

SIDNEY TUTTLE & CO., Bloomington, Ill.: Wholesale catalogue of trees, plants, roses, bulbs, etc.; also ornamental trees and plants.

THOMAS JACKSON, Portland, Me.: Wholesale catalogue of general nursery stock; forest tree seedlings a specialty.

DR. H. SCHROEDER, Bloomington, Ill.: Wholesale price-list of grapevines, small-fruit plants, ornamental trees, etc., etc.

W. ATLEE BURPEE & CO., Philadelphia, Pa.: Catalogue of novelties, comprising promising beans, melons, cucumbers, peas, potatoes, etc., etc.

JOHN S. COLLINS, Moorestown, N. J.: Wholesale price list of small fruit-plants, grapevines, and fruit-trees.

HARLAN P. KELSEY, Linville, N. C.: Catalogue of plants and flowers of the Southern Alleghany Mountains; native rhododendrons and azaleas a specialty.

THOMAS H. LOCK, Winnipeg, Man.: Catalogue of forest, fruit, and ornamental trees; tree seedlings a specialty.

J. E. NORMAND, Marksville, La.: Oriental and other fruit-trees for the South.

REASONER BROS., Manatee, Fla.: Illustrated catalogue of tropical and semi-tropical fruit-plants, comprising all kinds desirable for planting in the South.

MR. G. T. TABER, Glen St. Mary, Fla.: Illustrated catalogue of peach trees, persimmons, oranges, nut-bearing trees, and all other useful and ornamental kinds suitable for planting in the South. This list has been prepared with unusual care and study, to insure correctness of names, and should be in the hands of every one intending to plant in the South.

J. C. W. YOWELL & CO., Home Nurseries, Nashville, Ark.: Wholesale and retail price-list of fruit-trees, grape-vines, small fruits, etc.

MISCELLANEOUS.

A. BLANC, Philadelphia, Pa.: Catalogue of electrotypes of vegetables, flowers, floral designs, and garden views, valuable for catalogues, and other illustrations. The work of this house is constantly increasing in artistic value.

GEORGE Q. DOW, North Epping, N. H.: Price list of Berkshire pigs, St. Bernard dogs, poultry, also nursery stock.

NEW YORK TRADE SCHOOL, First avenue and 67th street, New York city: Prospectus of the ninth season.

SALEM IRON WORKS, Salem, N. C.: Illustrated and descriptive catalogue of sawmills, steam-engines, wood-planers, veneering machines and wood-working machinery generally. This is a handsome and carefully-prepared catalogue highly creditable to the old North State.

SANDWICH ENTERPRISE CO., Sandwich, Ill.: Illustrated catalogue of cultivators, corn-cutters, pumps, windmills, etc.

A. H. SHELDON, Albion, Iowa: Price-list of pure-bred Poland China swine.

SALEM IRON WORKS, Salem, N. C.: Illustrated and descriptive catalogue of sawmills, steam engines, wood-planers, veneering machinery, and wood-working machinery generally. This is a handsome and carefully prepared catalogue, very creditable to the old North State.

SANDWICH ENTERPRISE CO., Sandwich, Ill.: Illustrated circular of cultivators, corn-cutters, pumps, windmills, etc.

STAVER & WALKER, Portland, Me.: A large and richly illustrated catalogue of farm-machinery and vehicles of every description. If there is a more complete illustrated and descriptive catalogue of this kind in existence, it has not come to our notice.

A. F. S. LYONS, Greenfield, Mass. Circular of White Wyandottes.

J. MCDERMAID, East Rockford, Ill.: Circular of the boss star churns; also animal power, etc.

MUNROE, JUDSON & STROUP, Oswego, N. Y.: Circular and price-list of Canada hardwood unleached ashes, giving many useful hints about the financial value of wood ashes as fertilizers.

E. W. REID, Bridgeport, Ohio: Illustrated catalogue of the Planet Junior garden-drills, cultivators and potato-diggers, the excellence of which is acknowledged the world over. Also catalogue of small fruits, fruit-trees, etc.

Rheumatism

According to recent investigations is caused by excess of lactic acid in the blood. This acid attacks the fibrous tissues, particularly in the joints, and causes pains and aches in the back and shoulders, and in the joints at the knees, ankles, hips and wrists. Thousands of people have found in Hood's Sarsaparilla a positive and permanent cure for rheumatism. This medicine, by its purifying and vitalizing action, neutralizes the acidity of the blood and strengthens the whole body.

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100 Doses One Dollar

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We will send it free for two months to all who wish it and name paper.

Orchard & Garden, Little Silver, N. J.

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WITH STAY GUARDS ON

WHY NOT USE LARGE, SMOOTH WIRE, AND OUR STEEL STAY GUARDS, and build a fence that will not harm stock and yet be stronger, cheaper and more durable than any fence every offered?
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WOOD CUTTERS.

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SUITS from $12 up. OVERCOATS from $11 up.
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and guarantee Better Garments than the same money will buy elsewhere.

We can readily do this because (instead of scouring the market for odd lots and remnants) we buy the wool and convert it into the Pants you wear.

Samples, self-measuring rules, and a tape measure sent free We refer to Seventh Nat'l Bank, Philada.

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Lifts 20 to 50 Tons. Worked by 2 men. 5 sizes. Price, $35 to $70. Circulars Free. Sent on Three Days Trial. H. L. Bennett, Westerville, O.

Farming at Washington.

PROGRESS OF THE NEW EXECUTIVE DEPARTMENT OF AGRICULTURE.

Unusual interest attaches to the first report of the Secretary of Agriculture, which Mr. Rusk sent to the President, under date of Oct. 26, 1889. He details the crowded condition in which he found the Department, and its lack of means. Sufficient appropriations and an independent chemical department in a suitable building he deems immediately advisable. It is his desire to reorganize the Department upon an even broader plane than similar establishments in any other country. He has found it advisable to divide the Department into two grand divisions, "one embracing all those divisions, branches and sections which involve more particularly administrative and executive features and which have been retained under his personal supervision, and the other embracing those divisions which are engaged purely in scientific investigations, which have been assigned to the office of Assistant Secretary."

Reform in the publications of the Department has been undertaken. Special bulletins are now published giving the result of scientific work in "such language as will render them available to the average laymen." These are distributed to those who will make good use of them. But the gist of all publications of the Department are furnished in advance slips to the press of the country. The records of the folding-room show that 472,100 different publications have been prepared, besides other work. The library and museum are commended as worthy of more attention. The correspondence of the Department is constantly increasing, 40,000 letters having been received and answered in the first nine months of 1889. "This Department is for the struggling farmer, and there is no desire to abridge this labor; but my wish is to bring our work nearer their personal interests, and to make them feel, in every way possible, that we are helping them in their struggles."

The Division of Statistics employs 11,000 volunteer correspondents and paid agents in some States. Larger appropriations are advised for this work. It is pointed out that the crop reports are "not the conclusions of a thorough census, though they may be far better than the work of a poor census; they are the consolidation of local estimates of agricultural experts, and are commended as a foil to the interested, biased, and untruthful statements that speculators issue to mislead their victims." It is proposed to greatly extend the prompt circulation of the crop reports. The Statistical Division is investigating the resources and the development of the Rocky Mountain States, and "the results will surprise the Eastern States with new views of the wealth and progress of the great American Desert of the recent past."

The experiment of importing from Australia parasites of the Fluted Scale insect is pronounced successful in partially ridding California orange-growers of this great pest. Fungus and insect blights, leaf-mites, the horn-fly, and insects injurious to the roots of peach and other crops, have been conducted by the Division of Entomolgy, in addition to the periodical publication of *Insect Life*. In silk culture an effort is being made to perfect an automatic reel that shall substitute machinery for manual labor, upon which the success of silk culture in this country depends. The Chemical Division seems to have conducted a large number of analyses, and has also established laboratories in connection with sorghum sugar-factories in New Jersey, Virginia, Louisiana, Iowa, and at nine points in Kansas. The conclusion is arrived at that the sorghum-sugar business will not be profitable north of the southern portion of Central Kansas, west and south of Wichita, and in many parts of the Indian Territory. Experiments indicate that varieties of sorghum can be developed containing a higher content of available sugar than those heretofore grown.

The Botanical Division has given special attention to introducing and testing grasses adapted to the Southern States and to the arid and semi-arid regions of the West. Stations for this purpose have been established in connection with the Mississippi Experiment Station and the Colorado Station, and an independent one is under way at Garden City, Kan. The problem is to find forage plants adapted to non-irrigable lands. The Section of Vegetable Pathology has devoted its work chiefly to pear-blight and peach-yellows, and to a destructive disease of the grape in Southern California. The Division of Economic Ornithology is conducting scientific investigations, and has published some practical results on the English sparrow, crows, hawks, etc. The cultivation of fiber plants, but more especially machines for utilizing their fiber advantageously, will receive special investigation if the necessary means are provided.

The wisdom of Congress in establishing the Agricultural Experiment Stations in the respective States is commended, and the importance of the work of the Office of Experiment Stations in the Department is enlarged upon. Mr. Rusk is evidently in harmony with Prof. Atwater's desire to specially experiment on problems relating to the feed and nutrition of domestic animals and of man, and the completing of a systematic investigation of our soils, which is already begun.

The Forestry Division has not been able to accomplish much, though its importance is greatly enlarged upon. It is proposed to make the Horticultural Division of some extended use by giving it three hundred acres of land near by, which Congress is asked to sanction. In the Seed Division the distribution of seeds to Experiment Stations has become an important feature. A special agent has been engaged to personally inspect the product of seeds offered to the Department, so as to select only superior varieties. The best seed of various crops from foreign countries are also being introduced. The Division of Pomology has been engaged on horticultural researches in Florida, and through the regions from Texas and Wisconsin to the Pacific coast, with promising results.

It is proposed to give aid and encouragement to all proper agricultural organizations; and larger printing appropriations, with which to supply these societies with the Department's reports, are called for. A directory of these organizations shows that they now number nine thousand distinct bodies, an increase of four thousand since the first edition of the same list was prepared in 1885. Farmers' institutes are also indorsed. "I am strongly of the opinion that, without going into details as to the precise way in which aid to the movement should be furnished, the National Government should put it in power of the Department to foster and encourage the work of the Stations in the various States and Territories."

The Bureau of Animal Industry has succeeded in stamping out pleuro-pneumonia, so that it is only found in Kings and Queens counties, New York. The control by the Federal Government of Texas or splenetic fever is advocated. A comprehensive system of meat inspection is urged "that shall guarantee the fitness of our meat products for food consumption under the seal of the United States Government"—precisely the plan advocated by the AMERICAN AGRICULTURIST for January, 1889, in criticising some of the half-way measures that have been broached. A special division devoted to the dairy interests is to be established, and poultry, sheep, and wool are to receive attention. It is pointed out that since the reduction of the tariff of 1883 the numbers of sheep have apparently been reduced by about 7,000,000, and the importation of wool has increased from 78,000,000 to 126,000,000 pounds annually.

Rheumatism,

BEING due to the presence of uric acid in the blood, is most effectually cured by the use of **Ayer's Sarsaparilla.** Be sure you get Ayer's and no other, and take it till the poisonous acid is thoroughly expelled from the system. We challenge attention to this testimony:—

"About two years ago, after suffering for nearly two years from rheumatic gout, being able to walk only with great discomfort, and having tried various remedies, including mineral waters, without relief, I saw by an advertisement in a Chicago paper that a man had been relieved of this distressing complaint, after long suffering, by taking Ayer's Sarsaparilla. I then decided to make a trial of this medicine, and took it regularly for eight months, and am pleased to state that it has effected a complete cure. I have since had no return of the disease."—Mrs. R. Irving Dodge, 110 West 125th st., New York.

"One year ago I was taken ill with inflammatory rheumatism, being confined to my house six months. I came out of the sickness very much debilitated, with no appetite, and my system disordered in every way. I commenced using Ayer's Sarsaparilla and began to improve at once, gaining in strength and soon recovering my usual health. I cannot say too much in praise of this well-known medicine."—Mrs. L. A. Stark, Nashua, N. H.

Ayer's Sarsaparilla,

PREPARED BY

Dr. J. C. Ayer & Co., Lowell, Mass.

Price $1; six bottles, $5. Worth $5 a bottle.

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GOLD MEDAL, PARIS EXPOSITION, 1889.

THE MOST PERFECT OF PENS.

DR. SETH ARNOLD'S COUGH KILLER CURES COUGHS AND COLDS PREVENTS CONSUMPTION.

I WAS GIVEN UP to die with consumption by a prominent physician. Was advised by friends to try Seth Arnold's Cough Killer and much to the astonishment of all it cured me and I am now a well, hearty man. THOMAS D. PAINE, Jeweler, Woonsocket, R. I. 25c, 50c and $1 per bottle.

ALL DEALERS SELL IT.

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Grinds Coarse or Fine Wet or Dry.

WILL NOT Heat the Grain in Grinding.

IRON CYLINDER. STEEL CONCAVE. STEEL KNIVES.

BEST MILL ON EARTH.

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GRADER & THRESHER WORKS.

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Can be CURED by DR. SANDEN'S Electric TRUSS

Warranted Best Truss made, to CURE all Curable cases or Refund Money. Only Genuine Electric Truss in World. Perfect Retainer, Gives instant relief, speedy cure Ease and Comfort day and night. This New Invention combines science, durability and power. Price $3 & $5. Illus. pamphlet free.

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MASON & HAMLIN

The Cabinet Organ was introduced in its present form by Mason & Hamlin in 1861. Other makers followed in the manufacture of these instruments, but the Mason & Hamlin Organs have always maintained their supremacy as the best in the world.

Mason & Hamlin offer, as demonstration of the unequalled excellence of their organs, the fact that at all of the great World's Exhibitions, since and including that of Paris, 1867, in competition with best makers, of all countries, they have invariably taken the highest honors. Illustrated $23 to $900 catalogues free.

ORGANS

Mason & Hamlin do not hesitate to make the extraordinary claim for their Pianos, that they are superior to all others. They recognize the high excellence achieved by other leading makers in the art of piano building, but still claim superiority. This they attribute solely to the remarkable improvement introduced by them in the year 1883, and now known as the "MASON & HAMLIN PIANO STRINGER," by the use of which is secured the greatest possible purity and refinement of tone, together with greatly increased capacity GRAND & UPRIGHT, for standing in tune and other important advantages.

PIANOS

A circular, containing testimonials from three hundred purchasers, musicians, and tuners, sent, together with descriptive catalogue, to any applicant.

Pianos and Organs sold for cash or easy payments; also rented.

MASON & HAMLIN ORGAN AND PIANO CO.
BOSTON. NEW YORK. CHICAGO.

We will furnish the most economical roofing and siding, all styles. Also Metallic Shingles from Iron or Steel with full directions and low prices.

GARRY IRON ROOFING CO., Cleveland, O.
Mention Agriculturist.

POPULAR SONGS 1 cent each.

1	Baby Mine.	220	Annie Laurie.
4	Ella Rhee.	224	Come, Birdie, Come.
5	Old Cabin Home.	245	Nobody's Darling.
7	Old Black Joe.	248	Birdie Darling.
8	Home, Sweet home.	252	Darling Nellie Gray.
26	Whoa, Emma.	255	Little Brown Jug.
29	You'll Remember Me.	258	Erin is My Home.
29	No one to Love.	277	Kiss me Again.
33	Wearing of the Green.	280	Sweet Sunny South.
34	Cottage by the Sea.	316	They All Do It.
45	Poor Old Slave.	354	De Golden Wedding.
64	Blue-Eyed Nelly.	370	Old Kitchen Floor.
72	Faded Coat of Blue.	371	Sweet Belle Mahone.
77	My Old Kentucky Home.	387	Racers in the Air.
95	The Gipsy's Warning.	392	Pull Down the Blind.
98	Swinging in the Lane.	425	Ring my Mother Wore.
109	Kitty Wells.	472	Baby's got a Tooth.
112	Old Man's Drunk Again.	517	Lottie Lee.
138	Kiss Behind the Door.	549	My Old Wife and I.
140	Mary of the Wild Moor.	552	Peek-a-boo.
145	Mollie Darling.	635	Pretty Lips.
147	My Daughter Julia.	638	Call Me Back Again.
151	Driven from Home.	649	My Nelly's Blue Eyes.
175	The Slave's Dream.	655	Some Day.
181	Erin's Lovely Home.	929	Rock-a-Bye Baby.

We will send 10 of the above songs, your own selection, by mail, for 10 cents; 25 for 15 cents; the whole lot, 50 songs, for 25 cents; the Beautiful Song, **Ring My Mother Wore**, Words and Music, is alone worth more than we ask for the entire collection. Address,

HOME MUSIC CO., Providence, R. I.

The Newspaper Scheme.

One of the most pernicious and prolific crops in the country comes up under the first snows of winter. It is the crop of bogus newspapers. When the year's work is done and the long evenings have come, the country is flooded with advertisements of pretended publications, mostly bearing names suggestive of domestic or rural life, and offering watches, fountain pens, or chances in a lottery as "premiums." In some cases no paper is published at all, the whole scheme being an unqualified fraud. In others a sheet is printed from old stereotype plates, except those columns which are filled with advertisments such as no decent newspaper would publish. In a few months the mine is worked out, the victims have received, if anything, some worthless trinkets and two or three badly-printed, trashy numbers of the publication. The operator retires to wait for another season and a fresh crop of dupes, if he escapes falling into the hands of justice for fraudulent use of the mails. This fate overtook one fellow who had been making his headquarters in Chicago. He had flooded the western mails with circulars advertising several publications which had no existence, and offering to each subscriber a ticket in a "drawing" which was never drawn. He cleared $30,000, fled, and was at length overtaken and arrested. But his conviction and punishment does not restore the money he fleeced from his credulous victims, though it ought to teach a lesson to all who blindly venture their money in the hope of getting something for nothing.

Bogus Traveling Salesmen.

About these days look out for glib-tongued, plausible fellows who go from house to house in farming and village communities, soliciting orders for groceries. They claim to represent one or another house in New York, Philadelphia, or elsewhere, which is "retailing at wholesale prices." Large numbers of orders are taken, and when the goods arrive and are paid for, they are deficient in quantity and very inferior in quality. One of these "agents" has been operating in some of the Hudson river counties. No such firm is known in New York as the one he pretended to represent. In fact, reputable wholesale dealers are not accustomed to force retail sales by means of traveling agents in direct competition with country dealers who are their own customers at wholesale. In any case it is generally the best policy for farmers to patronize their own local dealers, rather than to look for "bargains" from irresponsible tramps.

Pointers.

The "Artists' Associations" of various cities still issue their circulars, urging the dear public to send likenesses of dead friends, to be returned each with a "crayon portrait free," upon the simple condition that a frame for it shall be purchased of the "Association." This condition is not stated in the first circular sent out, but is insisted on afterward, if any one sends a likeness in the hope of getting a crayon portrait. The result is in most cases a very coarse crayon photograph in a very inferior frame, at the cost of a good one.

The bogus "Mercantile Agencies" which promise to secure positions for salesmen, book-keepers, etc., in the city, for a fee equal to one week's salary, are sharks which prey upon a class of worthy young people who can ill afford to lose the money. All such light, cleanly avocations are already overcrowded in the city, and it is not in the power of any "agency" or "bureau" to find permanent positions in them for all who apply, more especially if the applicant is a stranger in the city.

Do not purchase real estate or pay a cent on it of any "Homestead Company," unless you are furnished a tax and title search, or a guarantee of some reliable Title Guarantee Company that the title is unclouded. Several persons, one of them a poor widow, have been victimized by the smooth-tongued president of a concern which receives monthly premiums and sells "property in any community within the United States," upon monthly payments. In more than one case the victim, after making a long series of monthly payments, was dispossessed by the foreclosure of a prior mortgage on the property.

Animal Ailments.

Thoroughpin.—T. M. Morgan, Fauquier Co., Va., wishes to know if a thoroughpin can be absorbed by local applications. The only effect local applications have is to remove the inflammation. Blister first, then the biniodide of mercury, or iodide zinc, will aid in keeping up irritation and absorption of thickened tissues to some extent. Rest for the animal will be indispensably necessary to secure all the good results possible.

Uneven Teeth of a Horse.—H. D. G., Carlwick, Ohio, has a horse fourteen years old, whose teeth are so uneven that he cannot masticate his oats. The edges of the teeth cut the mouth. Take a long, flat, fine file, stick the handle into a corn-cob up to the shoulder and gently and carefully file off the rough edges. Grind the oats and mix with bran and feed morning and noon. At night cut hay, moisten with water and mix the same kind of ground feed in it. Fourteen years is the middle of a horse's years, but two-thirds of his labor-life.

Bony Tumor on Jaw.—D. Bidwell, Hartford Co., Conn.: There is reason to fear that the hard, bony excrescence on the jaw of your valuable heifer is caused by actiniimycosis, or, as it is commonly called, "lump-jaw." This is a parasitic disease, of which little was known until within a recent period. It is caused by the growth in the bones or tissues of a minute vegetable parasite or fungus. In cattle it usually invades the jaw-bones, tongue, face, throat, and sometimes the lungs. It also attacks human beings, and eating the flesh of an infected animal is supposed to communicate the disease. No remedy has ever been found for it. Perhaps it will be well in this case to submit a portion of the diseased jaw to a skillful veterinary for microscopical examination. The disease is easily detected by the peculiar star-shaped character of the coccus-tufts. If it proves to be actinimycosis, the animal should be destroyed at once.

Hogs "Piling" in Winter.—A subscriber to the AMERICAN AGRICULTURIST has a large herd of hogs. They run together in winter, and sleep in the basement of a horse-stable. The litter from the horses constitutes the bedding of the hogs. The hogs are fed outside twice a day. In cold weather, especially, the hogs sleep in a compact heap or pile, and get so hot that when they come out to feed they are wet with steam. Many of the hogs are covered with lumps from the size of a hen's egg to that of one's fist, or larger. He asks for the cause of and cure for these lumps, and also how he can prevent "piling?" It always has been, and probably always will be, a difficult matter, when a large number of hogs are kept together, to prevent them from "piling." They do it to keep warm. The skin of a hog is very sensitive to cold draughts of air. We have all observed that when a storm is approaching the hogs will pick up straw and carry it in their mouths to make a bed. It is an old saying, "A hog can see the wind." In other words, they can tell when a storm is coming. This is owing to their sensitive skins. While "piling" cannot be wholly prevented, something may be done to lessen the tendency to crowd on top of each other. Draughts of cold air must be avoided. The basement should have a large ventilator, not less than three feet square, running to the top of the building. Then you can keep the doors shut, and only such windows or ventilators below need be opened that do not let the cold air directly on the pile of hogs. If you have any small, weak hogs, separate them from the others and give them a place to themselves. Give the hogs plenty of long straw to make a bed, and let them not be dependent on the horse-litter. The lumps on the hogs are probably nothing but bruises, caused by the hogs fighting and biting each other—not hard enough to tear the skin, but still severe enough to cause a bruise underneath. Unless very large, the blood and water they contain will be reabsorbed and the lumps will disappear. In bad cases, take a sharp-pointed knife and place the point at the lower part of the lump and push upward until you have opened an aperture large enough to let out all the matter in the lump. Of course it would be better to separate the hogs that are afflicted in this way from the rest; but if this cannot be done permanently, let them remain, for, if separated for a short time, when they are placed again with the herd they will be subjected to still harsher treatment from the stronger hogs, who will regard them as strangers, and bruise them badly.

RENEW NOW!

Immediately on receiving this number of the AMERICAN AGRICULTURIST please **forward** your **subscription** for the **ensuing year. Do not delay** until the **last moment,** when **renewals** come **pouring in** upon us by every mail in such large numbers that a mistake may now and then occur. If **your subscription expires,** or has expired (and that you can tell on examination of the number on the printed address label attached to the wrapper enclosing each copy of the AMERICAN AGRICULTURIST), **please renew now.**

If **517** appears on your **label,** it indicates that your **subscription expires** with this **December** number.

OF INTEREST TO CANVASSERS.

In every State and Territory people engaged in **various occupations are canvassing** during their **leisure moments** for **subscribers** to the AMERICAN AGRICULTURIST with **surprising success** and **considerable profit** to themselves. But **more canvassers are wanted** in **every locality,** in every school district, and in every State and Territory in the Union.

We also desire **active canvassers** in the Provinces and foreign countries as well. **To all** we can furnish **profitable employment.** Readers, canvassers, let us hear from you. Write us at once for particulars, full instructions, and canvassers' outfit.

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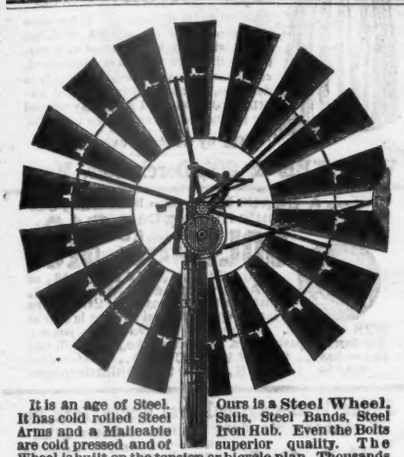

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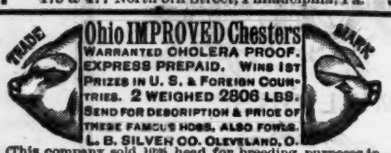
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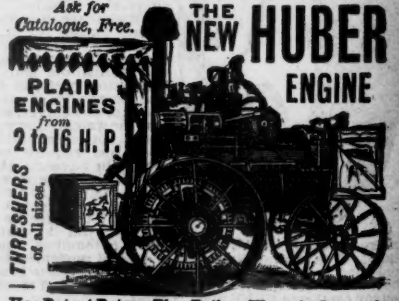

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